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ABSTRACT

This curriculum guide was produced to assist instructors of educational programs for novice motorcycle operators, automobile drivers, and all highway users. An introductory section discusses program implementation concerns, such as public relations, legal considerations, scheduling, staff, students, facilities, motorcycles, insurance, financial considerations, program evaluation, basic range set-up and range maneuvers. Eight lessons are included in the guide: (1) The Motorcycle in the Highway Transportation System; (2) Preoperation Preparation; (3) Preparing to Ride; (4) Riding; (5) Intermediate Riding Skills, (6) Environmental and Road Surface Conditions; (7) Motorcycle Selection, Insurance, Inspection, and Maintenance; and (8) Evaluation. Within each lesson the following information is provided: task, objectives, materials, references, range set-up, instruction, and supplementary activities. Lesson 8 provides methods of evaluating student achievement on performance objectives in lessons 1 through 7. Appended material includes applicable federal and Ohio laws, a motorcycle loan agreement, a program cost-out sheet, a suggested parental consent form, range cards, and a list of audiovisual instructional materials. (LRA)

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MOTORCYCLE SAFETY EDUCATION
A Curriculum Guide

Ohio Department of Education
Division of School Finance
Driver Education Section

CE 026037

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

FOREWORD

The increase in motorcycle use in recent years has stimulated educational programs across the nation. The Motorcycle Safety Education Curriculum Guide was produced to assist such programs for novice motorcycle operators, automobile drivers and all highway users.

The State Board of Education has long recognized the importance of education for those individuals entering our highly complex transportation system. The Ohio Department of Education, Division of School Finance, Driver Education Section has the primary responsibility of administering driver education programs meeting state minimum standards, which includes motorcycle safety education, and through the use of funds provided by the Governor's Highway Safety Program, National Highway Traffic Safety Administration, to enhance the effectiveness of such traffic safety efforts.

We trust that this curriculum guide will assist you in providing an educational opportunity to all individuals to become safe, responsible motorcycle operators.

Sincerely,

Franklin B. Walter

Franklin B. Walter
Superintendent of Public Instruction

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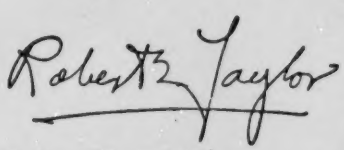
PREFACE

The Ohio Traffic Safety Education Center (OTSEC), a project of the National Center for Research in Vocational Education at The Ohio State University, is funded by the Ohio Department of Highway Safety, Governor's Highway Safety Program, and monitored by the Ohio Department of Education, Division of School Finance, Driver Education Section. OTSEC was organized to provide assistance to the citizens and state departments of Ohio in five basic functional areas: research, development, services, education, and dissemination. These areas to a large extent parallel the functional areas of the National Center.

Within the five areas, driver and traffic safety education projects at OTSEC have been broad in scope. They have included such activities as developing driver education curricula for use in public schools, publishing a traffic safety newsletter for distribution throughout the state, developing a driver education information package for local school boards, developing research reports, conducting workshops, and many others.

The outcome of OTSEC research, development, and education programs has been heightened awareness of driver education and traffic safety practices on the part of Ohio's citizens. By furthering this awareness, OTSEC has made and will continue to make a positive impact on traffic safety in Ohio.



Robert E. Taylor
Executive Director
The National Center for
Research in Vocational
Education

This publication was prepared by the Ohio Department of Education in cooperation with the Office of the Governor's Highway Safety Representative. Funds were provided by the National Highway Traffic Safety Administration of the United States Department of Transportation under 23 U.S.C., Section 402. The opinions, findings, and conclusions expressed in this publication are those of the authors and do not necessarily reflect the official views or policies of the National Highway Traffic Safety Administration.

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The staff of the Division of School Finance, Driver Education Section, acknowledge the expertise and assistance of Ohio educators in each of the developmental phases of this guide.

Advanced Driver Education Workshop at Miami University: This advanced workshop on motorcycle safety education, sponsored by the Ohio Department of Education with funds made available by the National Highway Traffic Safety Administration, studied the design and selection of behavioral objectives, human factors (learning, perception, risk acceptance, information processing, vision, motivation), current educational research on motorcycling, existing instruction units in the United States, and cost effective traffic safety countermeasures. At the culmination of this workshop the following Ohio school teachers wrote the first draft of this guide under the direction of Dr. Robert Shrader, Workshop Director: William Becker, St. Bernard; Lee Bevins, Cincinnati; William Bollinger, Dayton; Timothy Boone, Hamilton; Jerry Bowers, Dayton; Barry Caruso, Girard; John Gutzwiller, St. Bernard; Thomas Highley, Trenton; Myrle Hinesman, Defiance; D. Scott Hoover, Tipp City; David Isaccs, Tipp City; John Maxwell, Jr., Dayton; Ted Meholick, Dayton; Lou Ponder, Hamilton; Jill Seving, Toledo; Harry Skiff, Cincinnati; Terry Stephens, Trenton; Kenneth Thornburgh, Rocky River; Jan Worley, Cincinnati.

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INTRODUCTION

Public Relations

Because motorcycles may be a controversial subject in a community, good relations with the public are extremely important when implementing and operating a motorcycle safety education program. Public relations activity can help to provide an environment of goodwill and support for the program, both in the school and in the community. It generally falls upon the instructor to cultivate this type of environment.

Within the school, enlist the support of other teachers, administrators, operation and maintenance employees, aides and other paraprofessionals, student teachers, regular volunteers, and the students themselves. Remember: the students are the primary link between the school and the community.

Within the community, enlist the support of the parents; the PTA and other parent organizations; Board of Education members; motorcycle dealers, distributors and equipment suppliers; other educational institutions such as school systems, universities, and colleges; governmental agencies, including state and local law enforcement agencies; civic groups; and the news media.

The news media can be a key element in establishing community support for a program and in promoting traffic safety education in general. A very large percentage of what the public knows is formed or influenced by the news media. Some general rules to use in dealing with the news media are the following:

Be fair—don't play favorites. Give each news service equal treatment.

Be prepared—don't make news media wait. They may lose interest.

Be concise—don't be long winded or wordy. Provide a brief, typewritten, prepared statement or fact sheet about the program.

Be persistent—don't give up if the first attempt to obtain coverage fails. Try again. Make a personal visit to discuss coverage needs. Persistent efforts eventually will gain attention.

Be innovative—arrange for interviews on radio and television. For example, coverage of on-cycle instruction on the range is appealing news material for television. Focus on local people and organizations, such as dealerships, who are involved in the program.

Legal Considerations

See Appendix A for an index of the federal and Ohio laws most applicable to motorcycle instruction. The following are those of most immediate interest to the instructor.

- Motorcycles used on public streets and highways must be legal for street use in accordance with Section 4513 (especially 4513.03-4513.23) of the Ohio Revised Code.

- Operators of motorcycles used on public streets must possess either a temporary or a regular motorcycle license or endorsement in accordance with Section 4507 of the Ohio Revised Code. Students should be required to have a temporary permit on the first day of class.
- An applicant for a license or endorsement who is 16 years of age or older, but younger than 18, must have completed an approved driver education course in accordance with Section 4507.21 of the Ohio Revised Code.
- It is highly recommended that each student have on record a completed parental consent form (see Lesson 1 and Appendix F.)

Scheduling

The following time structure should be considered a minimum. It should not be construed as limiting or restrictive.

- Classroom instruction should total at least ten hours per student.
- Off-street on-cycle instruction (performed largely on a range) should total at least ten hours per student.
- On-street on-cycle instruction should total at least three hours per student. It is imperative that each student have some controlled on-street experience.

In accordance with the American Driver and Traffic Safety Education Association's *Policies and Guidelines for Motorcycle Safe Education,* the following guidelines are recommended.

- Each student should receive no more than three hours of instruction per day during the motorcycle safety education course.
- Classroom instruction should not exceed two hours per day.
- Off-street on-cycle instruction should not exceed two hours per day. As the student becomes fatigued, psychomotor learning tasks become more difficult.
- The duration of the entire course should be a minimum of two weeks.
- Classroom instruction and on-cycle instruction should be scheduled concurrently to maximize learning.
- The motorcycle safety education course should be scheduled at a time that will conveniently accommodate interested students.

Staff

In order to achieve the established objectives of this course, teachers should:

- possess a certificate to teach at the secondary level,
- possess a certificate to teach driver education,
- have successfully completed a teacher preparation course in motorcycle safety education,
- possess a valid motorcycle license or endorsement, and
- have a minimum of six months' experience in operating a motorcycle.

Students

Students in a high school motorcycle safety education course should:

- have successfully completed an approved driver education course,
- be at least 16 years old,
- have on file a completed parental consent form (see Lesson 1), and
- possess a motorcycle learner's permit before the beginning of the course. See Appendix A for applicable Ohio laws.

Instructor-Student Ratio

- Classroom: Twenty-four students is the maximum class size for one instructor.
- Range: An instructor ratio of one to six is recommended for range instruction.
- Street: An instructor ratio of one to three is recommended for on-street instruction.

Facilities

The following basic facilities are required for this course.

- Classroom: The classroom should accommodate up to twenty-four students and be supplied with the necessary audiovisual equipment.
- Off-Street Area: An off-street area convenient to the classroom is required. The Motorcycle Safety Foundation recommends a driving range, parking lot, or other clean, flat, paved area, 150 feet by 300 feet (see the Basic Range Set-Up on page 8). A somewhat smaller facility may suffice.
- Storage Space: Sufficient space is needed to store motorcycles and associated equipment. The space should comply with section 4101.2, Chapter 73 of the Ohio Administrative Code and state fire regulations.

Motorcycles

The five manufacturer sponsors of the Motorcycle Safety Foundation (Honda, Yamaha, Kawasaki, Suzuki, and Harley-Davidson) conduct a free loan program. Local dealers should be contacted regarding the availability of motorcycles under this program. Otherwise, motorcycles may be leased, rented, borrowed, or purchased. Do not use student-owned cycles as these can create problems relating to size, safe condition, insurance, and liability.

The following are points to consider when participating in the free loan program.

1. Type and number of motorcycles to request:
   - 90 to 125cc
   - street and combination types
   - at least one motorcycle for each student.

   (Course activities can, if necessary, be conducted with one motorcycle for every two students.)

2. Loan Agreement:

   - Involve all local dealers.

     Dealers are the key to obtaining motorcycles through the free loan program. Allowing all the dealers a chance to participate is essential to maintaining good public relations. An additional benefit is the exposure the students will have to the various makes and models available.

   - Give advance notice.

     Notify all the dealers of your needs as far in advance as possible; at least six weeks is recommended. Ideally, dealers should be aware of these needs before it is time to order the new model series.

   - Know your program.

     Be prepared to answer any questions the dealer may have concerning the instructional and administrative aspects of your program.

   - Know and abide by the loan agreement.

     A standard motorcycle free loan agreement form has been designed by the Motorcycle Safety Foundation (see the sample form provided in Appendix B). Local motorcycle dealers should have copies of this form. If you choose to design your own motorcycle free loan agreement, remember to include all aspects of the contract including any special provisions or arrangements. The signed agreement form represents and must be honored as a binding contract.

3. Pickup and return:

   - Transportation

     Be prepared to pick up and return the free loan motorcycles. If you do not have access to a van or pickup truck, one may have to be rented for this purpose.

   - Condition

     Have the students clean and polish the motorcycles before they are returned. Make as many repairs (such as replacing broken mirrors and brake and clutch levers) as you can. Never return dirty or poorly maintained vehicles.

   - Maintenance

     It is essential to return the motorcycles to the dealer in the best possible condition. In order to ensure that the motorcycles are in safe condition and good running order, perform the following maintenance checks:

     Oils and lubricants: Be sure that two-stroke oil is used in two-stroke machines, and four-stroke oil in four-stroke machines. Using the wrong oil can result in severe engine damage. Consult the owner's manual for information on lubrication.

     Chain: The chain should be adjusted and lubricated as specified in the owner's manual.

     Cables: Consult the owner's manual for the proper adjustments to the brake, clutch, and throttle cables. Check controls for smoothness of operation and check cable attachment points for frayed areas. Replace frayed cables immediately. Controls that do not operate should be lubricated and checked for bent and pinched cable housings.

Tires: Maintain tires at the recommended inflation pressure and inspect them for uneven wear, cuts, and other damage or deformities.

Controls: The control mounts should be snug but not immovable. This allows some adjustment for each student and will reduce the likelihood of lever breakage in the event the motorcycle falls.

Battery: Keep battery cells topped with distilled water at all times and keep terminals free of corrosion.

Spark plugs: Spark plug fouling is the most common cause of motorcycle failure during a training course. Always replace a fouled plug with another of the same type and heat range. Do not change plug types.

Nuts and bolts: All frame and engine mounting bolts should be checked periodically for tightness. Vibration causes nuts and bolts to loosen, a common occurrence on motorcycles.

4. Dealer recognition:

It is important to provide dealers with the appropriate recognition for their cooperation with the motorcycle safety education program. The following means are suggested.

- Letter of Thanks

  At the very least, a letter of thanks should be sent to each participating dealer. Remember, you will need their cooperation next year. A sample letter is provided in Appendix C.

- Certificate

  The Motorcycle Safety Foundation has developed a framed certificate recognizing the dealer's contribution. This can be obtained from the Motorcycle Safety Foundation and should be presented with some degree of ceremony. (Note: This would be an excellent occasion to include media coverage.) A form for ordering the certificates is provided in Appendix D.

Insurance

It is imperative that adequate insurance be acquired to protect the school, students, instructional personnel, and dealers against liability resulting from accidents. The following coverage is the minimum recommended:

$100,000/$300,000 bodily injury liability
$25,000 property damage
collision protection
comprehensive protection
medical payment

Some districts may be able to obtain insurance coverage as a part of their fleet policy covering the driver education program. If this cannot be arranged, a separate policy should be purchased through a motorcycle insurance underwriting company. The Ohio Insurance Institute can help in identifying such companies, as can the Motorcycle Safety Foundation.

Other Equipment

In addition to motorcycles, the following equipment is required:

- film or filmstrip projectors, as needed, for selected films and filmstrips (see individual lessons)
- overhead projector, as needed, for transparencies made from Resource Sheets
- screen
- 60 6-inch traffic cones (see pages 8 and 84 for additional information)
- Class B fire extinguisher
- first aid kit
- stop watch
- source of fresh drinking water and lavatory facilities near the range
- whistle, bullhorn, or loudspeaker
- two sparkplugs per motorcycle
- oil for two- and four-stroke engines
- one gallon of gasoline per student
- one vest per student
- tool kit (metric and American)
- 100-foot tape measure
- assorted spare parts, especially mirrors and clutch and brake levers

Financial Considerations

The cost of a motorcycle program must be determined as accurately as possible. Program costs will fluctuate with instructor salaries, participants involved, and available equipment and facilities. The following categories should help in analyzing program costs:

- administrative and instructional personnel costs
- instructional materials and supplies
- facilities such as classroom, range, and storage space
- motorcycle operating costs, including gasoline, oil, and spare parts
- range equipment such as traffic cones, fire extinguishers, tool kits, and first aid kits
- insurance

A worksheet prepared by the Motorcycle Safety Foundation to help estimate program costs is provided in Appendix E. Contact the Ohio Department of Education concerning the possibility of obtaining funds to recover these costs.

Program Evaluation

The motorcycle safety education program should be evaluated on an annual basis. It is important to assess the effectiveness of the program in reaching its instructional objectives in order to provide for constructive revision. This evaluative effort should encompass the administrative as well as the instructional aspects of the program.

How to Use This Guide

This motorcycle safety education course consists of seven instructional lessons and an eighth lesson devoted to evaluation. The Course Outline, pages 15-16, provides an overview of the lessons. Within each lesson the following information is provided.

Task: The task statement identifies the intended general outcome of the lesson.

Objectives: These specify the skills and knowledge expected as student outcomes of the instruction, stated as observable behaviors.

Materials: The instructional materials and equipment required for the lesson are listed. Films and filmstrips relevant to each lesson are listed by title in the Supplementary Activities. Full references are provided in Appendix H.

References: Printed materials are cited which may be useful to the instructor seeking additional information related to the content of the lesson. References are listed by number in the lessons; these numbers are keyed to the references in Appendix I.

Range Set-Up: Under this heading are described any required range facilities and equipment for the lesson. The layout of the range is presented in the form of a diagram. All range layouts are based upon the basic layout presented on page 8.

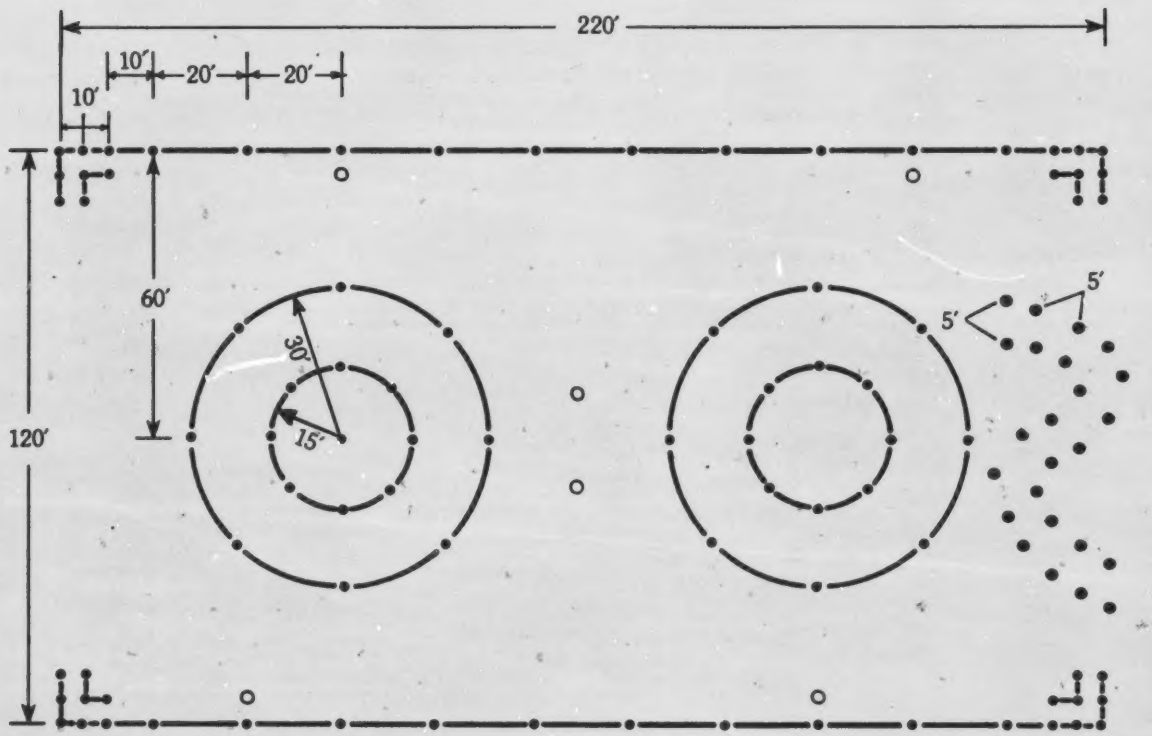
Instruction: Directions and related information for presenting the content of the lesson are provided in the instructional sequence. Activities are organized under general topic or skill headings and, wherever possible, are divided into separate activities such as discussion, demonstration, and student performance. In every lesson, opportunities are provided for students to demonstrate mastery of all performance objectives. It should be noted that there are no separate evaluation activities within the lessons: the instructor should closely observe student performance during instructional activities to identify any problems students may be having that might interfere with progress during subsequent lessons.

Supplementary Activities: The final section in the instructional sequence is devoted to supplementary activities. Activities listed here are optional, to be used when time permits or when the instructor perceives a need for additional enrichment. In many cases, these activities provide opportunities for enhancing public relations and community involvement.

Resource Sheets: These are informational pages, referenced in the instructional sequence, to be used as instructional aids. They may be used as reference materials for the instructor, duplicated as student handouts, or produced as transparencies. Each resource sheet should be returned to the Guide after it is used, to serve as a master copy for subsequent courses. No additional copies are provided with the Guide.

Basic Range Set-Up

The diagram below inciudes all the range set-ups for Lessons 1 through 7. The set-up for Lesson 8 (the performance exercise) is somewhat different and is shown in that lesson. Specific portions of the set-up that are required for Lessons 1 through 7 are explained in each lesson.

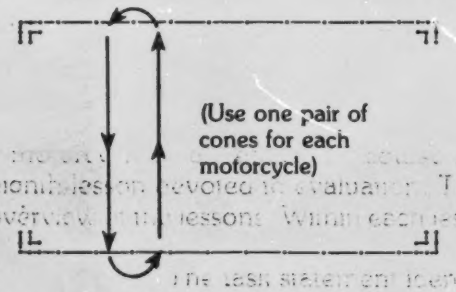


White circles (o) indicate cones that are to be added for specific activities in Lesson 4. As diagrammed here this set-up includes 114 cones; however, 56 is the most that are needed for any single lesson activity. A summary of range maneuvers is shown on the next page. The performance exercise in Lesson 8 requires 60 cones.

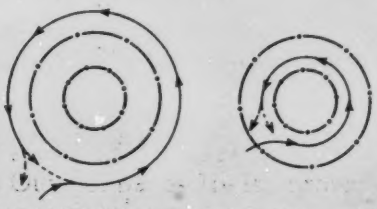
*Note: Reproduced, with changes, from *Motorcycle Rider Course: Instructor's Guide*, p. 4-3, with permission of the Motorcycle Safety Foundation. Copyright 1976 by the Motorcycle Safety Foundation.

Summary of Range Maneuvers

Lesson 3, Activities B, C, E, and F

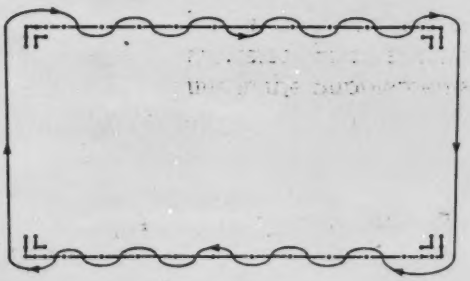


Lesson 4, Activities A.2 and A.3

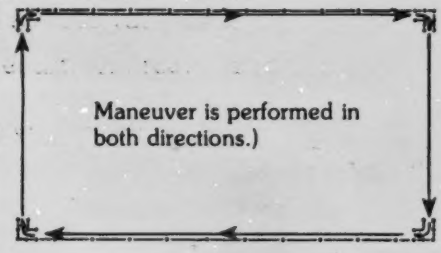


(Each maneuver is performed in both directions, using one or both sets of circles as needed.)

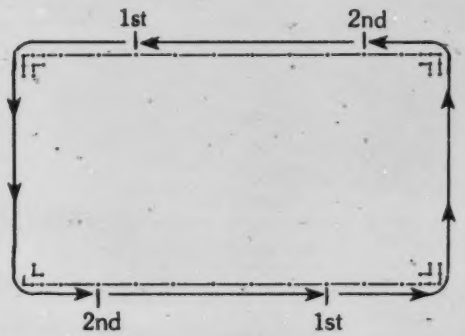
Lesson 4, Activity A.4



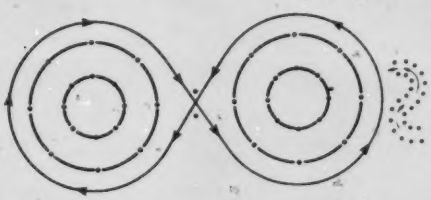
Lesson 4, Activity A.5



Lesson 4, Activity B.2

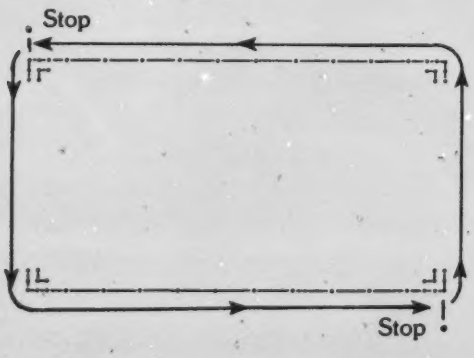


Lesson 4, Optional Activity A.6

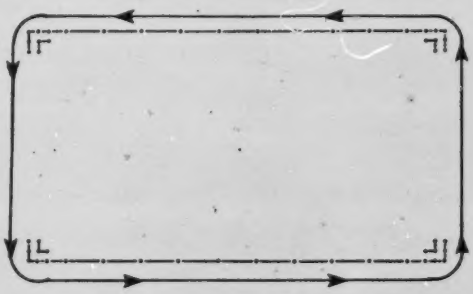


(These are two separate maneuvers.)

Lesson 4, Activity C.2



Lesson 5, Activities B.2, D.2, and D.4



LESSON 1. The Motorcycle in the Highway Transportation System

Task

Examine the relationship of the motorcycle to other vehicles in the highway transportation system and the importance of operating the motorcycle skillfully and safely.

Objectives

1. Define and describe the makeup of the traffic mix.
2. Identify the advantages and disadvantages of operating a motorcycle in the transportation system.
3. Identify five factors that make the motorcyclist more vulnerable to accidents and injuries than operators of other vehicles.
4. Cite facts and statistics related to motorcycle safety which illustrate the importance of learning to ride a motorcycle skillfully and safely.
5. List three reasons for adhering to the laws and regulations of the highway transportation system.

Materials

Required:

Course registration forms, as required, one per student

Parental consent forms, one per student (see Appendix F for sample form)

Resource Sheets 1, 2, and 3, one per student if used as handouts

Optional:

Films or filmstrips, as listed in Supplementary Activity E.1

Projector and screen for films or filmstrips, as needed

Bicycles, mopeds, or motorcycles for Supplementary Activity E.3

References

The following references, listed in Appendix I, may provide additional information related to this lesson: 1, 3, 4, 5, 6, 7, 8, 9, 11, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 26, 27, 28, 33, 34, 35, 36, 37.

Range Set-Up

No range set-up is required for this lesson.

Instruction

A. Organization of the Course

1. Introductions

Introduce yourself and any other instructional staff who will be involved in the course and have students introduce themselves. It may be helpful, in terms of class management and student relationships, to have students summarize such specific points about themselves as:

- prior experience on a motorcycle or other two-wheeled vehicles,
- reasons for learning to ride a motorcycle, and
- plans for motorcycle use in the future (commuting, gas saving, transportation alternatives, leisure riding, travel, and so on).

2. Course Preview

Describe the course content and requirements. Include the items listed below and add any information pertinent to your own expectations.

- instructional content, sequence, and schedule
- expected outcomes
- equipment and apparel students are required to supply for the course
- instructor expectations (deportment, attendance, or others as identified by the instructor).

Resource Sheet 1 may be completed and used as a handout. Selected supplementary activities should be added, as well as information on class sessions, special notes or requirements, and equipment and apparel.

3. Forms and Procedures

Discuss the required forms and procedures for the course as outlined below.

- Registration forms
  Any required forms for the particular course or school should be completed during class.
- Parental consent form (see Appendix F)
  Consent forms (for students under 16) should be completed by parents or guardians and returned by the next class session.
- Motorcycle permit
  Students should have the permit in their possession the first day of class. Check each student's permit.

B. The Motorcycle in the Traffic Mix

1. Discussion: Makeup of the Traffic Mix

Define the traffic mix as the wide variety of vehicles and pedestrians that share the roadway. Ask students to identify vehicles that, with pedestrians, make up the traffic mix. Be sure the following are included:

- automobiles
- trucks (all sizes)
- vans, trailering vehicles

- buses
- motorcycles
- mopeds and motorized bicycles
- bicycles

2. Discussion: The Motorcycle in the Traffic Mix

   a. Using Resource Sheet 2 as a reference or handout, point out the increasing proportion of motorcycles in the traffic mix.

   b. Ask students to identify factors that might contribute to increased motorcycle use, as listed below under "advantages." Have the students also identify "disadvantages" of operating a motorcycle (as compared with an automobile) in traffic, as listed below.

Advantages	Disadvantages
• maneuverability • ability to stop in a shorter distance • ease of parking • economy (purchase price, fuel, maintenance and repair, insurance) • pleasant riding (in fair weather)	• lack of protection for the operator • instability of the vehicle • low visibility (lack of conspicuity) • forced space usage • operator fatigue • limited space for cargo and passengers

3. Discussion: Vulnerability

Discuss how most of the disadvantages listed above contribute to the vulnerability of the motorcycle operator, as outlined below.

- Lack of protection for the operator

  The motorcyclist is on the vehicle, not in it. In an accident, there is no vehicle structure to protect the rider. Even minor accidents can cause severe injuries. The rider is also exposed to inclement weather and flying objects.

- Instability

  Because a motorcycle has only two wheels, it is inherently unstable, especially at slow speeds. Adverse road conditions and inclement weather aggravate instability.

  Because of instability, factors such as road surface hazards (sand, oil, potholes, and railroad tracks), mechanical malfunctions, operator error, or shifting of passengers or loads can cause a spill. (The operator of a four-wheeled vehicle, by contrast, has the opportunity to regain control or stop in the same circumstances without falling over.)

- Low visibility (lack of conspicuity)

  The motorcycle is a very small vehicle compared with an automobile.

  The motorcycle blends easily into the background.

  The motorcycle is not a major part of other motorists' expectations.

- Forced space usage

  To avoid a hazard and maintain stability, the rider may be forced into using only a portion of the available road surface. This action may compromise other safety considerations.

- Weight

  The motorcycle is much lighter than other vehicles (300 to 700 lbs. for motorcycles, as compared with one to two tons for cars). Combined with the other factors, light weight will cause the motorcyclist to be the loser in any accident involving another vehicle.

- Operator fatigue

  Operating a motorcycle is very demanding and fatiguing, both mentally and physically. A fatigued operator is less able to respond quickly and competently in an emergency situation.

C. Motorcycle Accidents: Implications for the Beginner

1. Discussion: Accident Data

Using Resource Sheet 3 as a handout or reference, cite facts and statistics that illustrate the high rate and severity of motorcycle accidents and their causes.

Ask students to summarize verbally or in table or graph form the major points revealed by the statistics and facts cited. The following should be included:

- high injury and death rate
- youth
- inexperience
- lack of instruction
- lack of conspicuousness
- importance of helmet use

2. Summary (or Student Performance): Importance of Riding Skills

Point out the importance to the students (as young, inexperienced riders with the odds inevitably against them) of learning to be safe, skillful riders—for their own protection.

Note: This may be presented as a student performance activity by asking students to state verbally or in writing why skillful operation of a motorcycle is especially important for them. Points discussed above under rider vulnerability and accident data should be included.

D. Adhering to Laws and Regulations

1. Discussion

Present and discuss the reasons for adhering to laws and regulations, as outlined below.

- Efficiency

  Maximum use and efficiency of a system can come about only if the system is well ordered.

- Safety

  A well-ordered system minimizes such unexpected events as accidents. This results in a safer environment for all users.

- Responsibility

  As citizens exercising the privilege of using the highway transportation system, motorcyclists have a responsibility to themselves and others to act in a reasonable and responsible manner. The alternatives are injury, legal penalties, and death.

Stress the following points in relation to the motorcyclist.

Familiarity with the traffic laws and regulations is critical to the motorcyclist's safety and well-being. It is important to remember that the highway transportation system has evolved around four-wheeled and easily seen vehicles. Motorcycles are the exception rather than the rule. Motorcyclists are among the most vulnerable of highway users and thus have the most to gain from a harmonious and well-ordered traffic environment. As the adage goes, "There are old bikers and bold bikers, but no old, bold bikers."

E. Supplementary Activities

1. Show a film or filmstrip related to the motorcycle in the traffic mix, such as one of the following. Full references for these and others listed in the Guide are provided in Appendix H.

   - *Attitude in Motion* (Honda)
   - *Eye That Cycle* (AAA, ODHS)
   - *It's Your Move* (Travelers)
   - *Motorcycle Driving Tactics* (Cahill, ODHS, KSU)
   - *Motorcycle: Sharing The Road* (Enc. Brit., Ind. U.)
   - *Not So Easy* (Film Fair, ODHS)
   - *The Way to Go* (Unit I Film, MSF)
   - *Uneasy Rider* (AAA, ODHS)
   - *Unit I Film* (Kawasaki)

2. Invite one or more of the following guest speakers to discuss motorcycle advantages, disadvantages, vulnerability, accident statistics, experiences in sharing the highways with larger vehicles, or other topics related to the motorcycle in the traffic mix.

   - police officer
   - motorcycle dealers
   - experienced riders
   - medical personnel
   - state motorcycle safety coordinator
   - highway safety personnel

3. Provide a preskill drill to give students who have never ridden a two-wheeled vehicle a chance to gain a feel for balance. Bicycles, mopeds, or motorcycles may be used. See Lesson 3 for basic maneuvers.

RESOURCE SHEET 1

Course Outline

Class Session	Lesson	Topics and Skills Covered	Special Notes, Requirements, or Other Comments
	1. The Motorcycle in the Highway Transportation System.	Course organization, completion of forms The motorcycle in the traffic mix: advantages, disadvantages, vulnerability Motorcycle accidents: implications for the beginner Adhering to laws and regulations	No range activity for this lesson. A preskill drill is available for students with no experience on a two-wheeled vehicle. Motorcycle permit required.
	2. Preoperation Preparation	Locations and functions of motorcycle controls and devices Safety equipment and apparel	Consent forms should be returned.
	3. Preparing to Ride	Mounting and dismounting Walking the motorcycle while astride "Pushing Buddy" system Starting and stopping the engine and parking Finding the friction point Riding in a straight line and stopping (rear brake only)	Range activity begins. Safety apparel and equipment must be used in this and all subsequent lessons. (See equipment list, next page.)
	4. Riding	Turning: gradual and sharp turns Shifting Braking: front and rear brakes, engine braking, and combination	
	5. Intermediate Riding Skills	SIPDE Three-second rule Defensive driving Changing lanes Passing Riding in groups Passengers and loads	On-street riding begins in this lesson.
	6. Environmental and Road Surface Conditions	Environmental conditions: handling rain, wind, cold, frost, and other weather-related road conditions Adverse road surface conditions: handling potholes, litter, gravel, ruts, railroad hazards Fast stops	

Class	Session	Topics and Skills Covered	Special Notes, Requirements, or Other Comments
	7. Motorcycle Selection, Insurance, and Maintenance	Purchasing a motorcycle: factors to consider, types of motorcycles, financial responsibility Preriding inspection Periodic maintenance	No range activity for this lesson.
	8. Evaluation	Course test and student performance of all skills learned in course.	

Required Equipment and Apparel

You are responsible for furnishing the items checked below. They must be brought to every class during which motorcycles are used (see outline). Note: *No Safety equipment = no on-cycle participation.*

_____ approved, well-fitted helmet
_____ eye protection (goggles, glasses, or face mask)
_____ gloves (strong, scuff resistant)
_____ boots (over-the-ankle)
_____ jacket
_____ long pants

Weather

Watch the weather. Be prepared for riding under any conditions by bringing the proper apparel (rain gear, heavy jackets, and so on). The content of class sessions may be changed at any time to take advantage of bad weather as a learning experience.

Other Course Requirements

RESOURCE SHEET 2

Motorcycle Population

The highway traffic mix in the United States is becoming increasingly diversified. Today the traffic system includes significant numbers of automobiles, trucks, buses, motorcycles, mopeds, motorized bicycles, and pedestrians.

Motorcycles make up an increasingly large proportion of the traffic in Ohio and in the nation:

- From 1961 to 1978 motorcycle registration increased 758 percent.
- In the same time period automobile registration increased 86 percent.
- In 1978, there were nearly five million motorcycles registered in the United States.
- In 1978, there were 445,602 motorcycles registered in Ohio (a 3.6 percent increase over 1977).

RESOURCE SHEET 3

Motorcycle Accident Data

1. Motorcycle accidents more often cause injuries and are more often fatal than automobile accidents. Those injuries and deaths are increasing, as shown by the following statistics compiled from various studies.

    - Accident fatalities are nearly double for motorcycles (6.50 per 10,000 registered vehicles in 1976) than for automobiles (3.28 per 10,000 in the same year). (C)*
    - 83 percent of all motorcycle accidents cause injury. (C)
    - Although motorcycles have fewer accidents per number of registered vehicles than automobiles do, they have more than their share of *fatal* accidents. (E, H)
    - Injuries caused by accidents tend to be more severe for motorcycles than for automobiles. (E, H, I)
    - Changes in national motorcycle statistics from 1969 to 1978 include:

        a 13 percent increase in number of accidents per 10,000 registrations,
        an 18 percent increase in number of fatalities per 10,000 registrations,
        a 4 percent increase in number of fatalities per 100 accidents,
        a 138 percent increase in number of reported accidents, and
        a 149 percent increase in number of fatalities. (L)

    - From 1977 to 1978, although the number of motorcycle registrations decreased nationally by 2 percent and the number of accidents decreased by 3 percent, the number of fatalities increased by 12 percent. (L)

2. The greatest percentage of motorcycle accidents involve other vehicles at urban intersections, often with the other driver at fault. A common situation is the motor vehicle turning left in front of the motorcycle. Very often, the other driver has not seen the motorcyclist. (B, C, I)

    - Of accidents involving other vehicles, approximately 40 percent occur at intersections. (B, C)
    - In at least 70 percent of these (93 percent according to one study), the driver of the other vehicle is at fault. (B, C)
    - Failure to yield the right of way is the most common driver error no matter who is at fault: 81 percent of the accidents when the other driver is at fault and 49 percent when the motorcyclist is at fault. (B)
    - Speed is the main driver error for drivers of all vehicles in fatal accidents. (I)
    - In 74 percent of accidents at intersections, the motorcyclist is not at fault. (C)
    - Other common circumstances of motorcycle accidents include:
        - daylight (67 percent)
        - dry road surface (91 percent)
        - 4:00 to 7:00 p.m. (27.5 percent)

*Letters in parentheses refer to sources of information listed at the end of this resource sheet.

- Close to home (64 percent within five miles, 79 percent within 15 miles)
- Saturday
- Summer (C, J, H)

3. Several causal factors are significant in motorcycle accidents. While exact statistics in different states and from different studies vary, they tend to support the same findings. Below are examples of fairly typical statistics.

   - Inexperience of the operator:
     - Four times as many motorcycle accidents as nonmotorcycle accidents involved operators with less than one year of experience. (E)
     - Well over 20 percent (70 percent in one study) of motorcycle accident victims rented or borrowed the vehicle. (E, H)
     - Almost 50 percent of motorcycle accidents occurred during the first six months of riding. In one study, 20 percent of accident victims were using the motorcycle for only the first or second time. (A, E)
   - Youth of the operator:
     - Over 50 percent of motorcycle accident victims are 17 to 26 years old; more than 40 percent are under 20. (D, C, H)
     - The likelihood of an accident is greatest in the first year of riding or the 16-to-20 age group. The accident rate for 16-to-20 year olds with less than six months' experience is double that for the same age group with greater experience. (C)
   - Lack of preparation for riding:
     - Only 54.5 percent of motorcycle accident victims had a motorcycle license. (D, K)
     - In one study, 72 percent of the accident victims (and 92 percent in another) had had no formal motorcycle instruction. (E, H, K)
     - One of the three major factors in injury producing motorcycle accidents is lack of knowledge of vehicle operation—especially turning, stopping, and riding properly in traffic. (E)
     - Lack of crash avoidance skills is a significant factor in accidents involving motorcyclist error. (D)
     - Although over 90 percent of motorcycle accidents involve males, females are overrepresented in the statistics in terms of their numbers in the riding population. One study attributes this to poor crash avoidance skills. (F)
   - Alcohol and other drugs:
     - Alcohol and other drugs are involved in over 40 percent of fatal motorcycle accidents, 12 percent of motorcycle accidents overall, and 27 percent of accidents in which the motorcyclist is at fault. (C, H, K, L)

4. Use of a helmet decreases the likelihood of serious injury or death. Findings that support this fact are overwhelming. Below are statistics and conclusions of just a few studies.

   - Head, arm, and leg are the parts of the body most commonly injured in motorcycle accidents; head injuries are the most serious. (E, H)
   - Helmet use is the single most critical factor in prevention of head injury. (D)
   - Helmet use caused no reduction of critical traffic sounds or visual field. There was no crash causation by helmets. (D)
   - Unhelmeted riders are 2.67 times more likely than helmeted riders to sustain head injuries that are incapacitating or fatal. They are 2.5 times more likely to die. (G)
   - In one study of motorcycle accident victims, 40 percent of the victims were wearing helmets but only 23 percent of the fatally injured victims were wearing helmets. Only one helmeted rider died of a head injury. (D)
   - In another study, 43 percent of accident-involved riders not wearing helmets sustained severe to fatal head injuries. (E, H, I)
   - From 1967 to 1970, states with helmet requirements had consistently lower fatal accident rates than states without helmet requirements. (E, H)
   - In one state, motorcycle fatalities dropped 49 percent and fatal head injuries dropped 61 percent when a helmet requirement was put into effect. (I)

Sources of Information

A. "MSF News," August 17, 1979.
B. "Sharing the Roadway: Motorists and Motorcycles in Traffic," MSF, 1974 (1975 printing).
C. "Analysis of Motorcycle Accident Statistics," MSF, March 1978.
D. "California Study Probes Causes of Motorcycle Crashes," *Status Report*, June 21, 1979, (Vol. 14, No.10), p. 3.
E. "A Look at Motorcycle Accidents in 1976," Barbara Carraro, *Traffic Safety*, January 1978, pp. 8-11, 27-30.
F. "Accidents and Injuries: Why They Happen," Alan Fratner, *Rider*, December 1978, pp. 42-43, 74-80, 84.
G. "Are Motorcycle Helmets Necessary?" Myron Koehler and Curtis Goode, *TDTSEA Journal*, Summer 1979, pp. 10-11.
H. "Update on Motorcycle Accidents," Barbara Carraro, *Traffic Safety*, February 1979, pp. 8-11, 29-32.
I. "Motorcycle Facts September 1976," NSC Safety Division.
J. "Motorcycle Accidents, Part II," Roger P. Quane, *MSF: On The Move*, June 1979 (Vol. 5, No. 3), p. 3.
K. "Motorcycle Accidents, Part 3," Quane, *MSF: On The Move*, August 1979 (Vol. 5, No. 4), p. 4.
L. "Motorcycle Statistics—1978," *MSF Cycle Safety Info.*

LESSON 2. Preoperation Preparation

Tasks

1. Introduce motorcycle controls and devices and their functions.
2. Review Ohio laws and regulations that pertain to motorcycle equipment and operation.
3. Examine some of the personal protection equipment that is available to help protect the motorcyclist.

Objectives

1. Identify the legal requirements that apply specifically to motorcycle equipment and operation.
2. Given a motorcycle, locate and identify each of the controls and devices and state its function.
3. Identify eight types of motorcycle safety equipment and apparel and specify how each type contributes to the safety of the motorcyclist.

Materials

Required:

Ohio Motorcycle Operator's Manual: Supplement to the Ohio Driver Handbook (or copies of the sections on equipment and operation), one per student

One or more motorcycles, or transparency or handouts (one per student) made from Illustration 1 (page 29).

Overhead projector if transparency is used

Samples of safety equipment and apparel (as listed in Activity C.1)

Optional:

Films or filmstrips, as listed in Activity D.1

Projector and screen for films or filmstrips

Guest speaker, as described in Supplementary Activity D.2

Resource Sheet 4, one copy per student

References

The following references, listed in Appendix I, may provide additional information related to this lesson: 1, 5, 6, 7, 10, 12, 14, 15, 16, 20, 21, 28, 32.

Range Set-Up

No range set-up is required for this lesson.

Instruction

A. Legal Requirements Regarding Equipment and Operation

1. Discussion

Provide each student with a copy of the *Ohio Motorcycle Operators' Manual* (or copies of the pertinent sections). Review the provisions pertaining to equipment and operation, as outlined below. (If preferred, the regulations may be noted instead during Activities B.1 and C.1 as the related equipment and apparel are discussed.)

Equipment regulations*

a. The seat must be firmly attached.

b. The handlebars can be no higher than 15 inches above the seat.

Note: Many "customizing" modifications actually impair the handling and safety of a motorcycle. This applies especially to overextended front ends and high handlebars.

c. The motorcycle must have at least one and no more than two headlights.

d. The motorcycle must have at least one taillight/brake light.

e. The motorcycle must have a functional horn.

f. The motorcycle must have at least one functional rear view mirror.

g. A white light must illuminate the license plate in the rear.

h. The motorcycle must be titled and registered.

i. The motorcycle is subject to random vehicle inspection.

Motorcycle operation

a. Riders must straddle the seat, facing forward.

b. No more than two motorcycles should be abreast in a lane.

Note: The staggered formation is safer!

c. Riders under the age of 18 must wear approved safety helmets.

d. Novice riders must wear approved safety helmets. (A novice rider is legally defined as a rider who has been licensed to operate a motorcycle for a period of less than one year.)

e. Passengers must wear helmets if:

1. they are under 18 years of age,
2. they are novices, or
3. the operator is under 18 or a novice.

f. Riders must wear approved eye protection devices.

g. Riders must have a special motorcycle license or an endorsement to an operator's or chauffeur's license.

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*This information can be found on p. 35 of *OMOM* and in Sections 4511.53 and 4513.03-4512-23 of the *Ohio Revised Code*.

B. Motorcycle Controls and Devices

1. Locations and Functions

Using either a transparency made from Illustration 1 (page 29), an actual motorcycle, or both, conduct the following activity:

- Point out each of the controls and devices on the motorcycle, as listed below.
- As each control or device is identified, explain—or have students explain—its function.
- If motorcycles are available for this activity, have students locate and touch each part as it is identified. If the illustration is used, review the activity later using actual motorcycles.
- Emphasize safety tips and other comments noted in the following list.

Control or Device	Function, Comments
1. Headlight*	Illuminates the road ahead and helps other highway users see the motorcycle.
2. Turn signal	Signals to other highway users that the motorcyclist is turning or changing lanes.
3. Speedometer	Registers the speed of the motorcycle, usually in miles per hour.
4. Tachometer	Registers the engine speed in revolutions per minute (rpm).
5. Ignition switch	Starts the engine (in combination with the starter). Although the ignition switch is usually near the center of the handlebars, sometimes it is located below the fuel tank.
6. Mirror	Enables the operator to see the rear of the cycle. Two mirrors, one on each side, are best.
7. Clutch lever	Disconnects the engine power to the rear wheel, enabling smooth shifting.

*Numbers correspond to the key numbers on Illustration 1, page 29.

Control or Device	Function, Comments
8. Turn signal switch	Activates the turn signals (see "turn signal," above). Most motorcycles do not have self-cancelling turn signals. The operator must cancel them after each turn or lane change. Although usually located on the left handlebar, the switch may be found on the right handlebar.
9. Horn	Makes other highway users aware of the cyclist's presence.
10. Front brake lever	Engages the front wheel brake and activates the brake light.
11. Starter	Starts the engine after the ignition switch has been turned on. Depending upon the make of the motorcycle, the electric start button is usually on the handlebar and the manual kick start lever on the side of the engine.
12. Kill switch	Enables the operator to shut down the cycle quickly.
13. Throttle	Controls the gas supply to the engine. This in turn controls the speed of the cycle.
14. Fork lock	Locks the front wheel at an angle so that the cycle cannot be stolen easily. (When the wheel is locked, the cycle can be pushed only in a circle.)
15. Fuel filler cap	Permits the fuel supply to be checked and permits refueling.
16. Fuel supply valve	Controls the flow of gasoline from the fuel tank to the carburetor. The valve can be set on "on," "off," or "reserve." The valve should be left on "off" when the motorcycle is not in use. Otherwise, some bikes will leak gasoline through the carburetor. Generally, motorcycles do not have fuel gauges. The gas level must be checked before each ride by looking in the gas tank. When the main fuel tank is empty, turning the valve to "reserve" lets gas flow from a special, small reservoir. This allows the cyclist to reach a gas station for refueling.

Control or Device	Function, Comments
17. Choke	Starts the engine and allows the engine to operate when it is cold. Depending on the make of motorcycle, the choke may be found on the carburetor or on the handlebar. The choke should be released gradually as the engine warms up.
18. Shift lever	Shifts gears upward or downward, making it possible to travel at different speeds without straining the engine and to apply engine braking.
19. Rear brake pedal	Engages the rear wheel brake and activates the brake light.
20. Foot pegs	Provide a resting place for the operator's feet and allow for easy operation of the shift lever and rear brake. Some motorcycles have passenger foot pegs as well.
21. Stand	Supports the motorcycle in an upright position when at rest and unattended.
22. Taillight	Enables other highway users to see the motorcycle, especially after dark.
23. Brake light	Signals other highway users that the motorcyclist is braking.
24. Odometer	Registers the total number of miles the motorcycle has been driven.
25. Trip meter	Registers the number of miles the motorcycle has been driven since the gauge was last set. This gauge, which can be reset for each trip, is often the only means of keeping record of the remaining fuel supply.

2. Student Performance

Have students pair up and, using the Key to Illustration 1 (p.30) as a guide, take turns locating each control and device on the motorcycle and explaining its function. If possible, conduct this activity with actual motorcycles.

C. Safety Equipment and Apparel

1. Identification and Discussion

Identify each of the items of safety equipment and apparel listed below. Discuss (a) the function of each, (b) types available (if applicable), (c) criteria for selection, and (d) other comments, as noted. When discussing helmets, stress the importance of a helmet in reducing injuries and saving lives. Facts from Resource Sheet 3 (Lesson 1) related to helmet use may be presented or reviewed here. Resource Sheet 4 (for Supplementary Activity D.4, Lesson 2) may also be discussed at this time.

Item	Function, Types	Criteria for Selection, Comments
Operator and Passenger Safety Apparel		
Helmet	Protects the head in the event of an accident.	• Meets state and federal standards. • Fits properly and is comfortable. (A properly fitted helmet is considerably more comfortable than one that is poorly fitted. Furthermore, a poorly fitted helmet can cause injury.) If a helmet has been damaged in a collision, or if it has suffered some other hard impact, it must be replaced.
Eye Protection Devices	Protect the eyes and increase the operator's ability to see hazards. Types: • goggles • glasses • face shields • (Windshields, also for eye protection, are discussed under motorcycle safety equipment.)	• Meet state and federal standards. • Fit properly and are comfortable. (Discomfort is distracting.)
Gloves	Protect the hands from the high degree of exposure they experience during motorcycle riding.	• Fit properly and are comfortable—no interior seams. • Made of strong, tear and scuff resistant material. • Designed to cover cuffs in cold weather.

Item	Function, Types	Criteria for Selection, Comments
Boots	Provide protection and support for the foot and ankle.	• Provide firm ankle support. Lace-style boots are preferred. • Easy to remove in the event of ankle injury. Lace-style boots provide good ankle support and can be removed easily in the event of an ankle injury. Thongs, sandals, loafers, and tennis shoes should never be worn when riding a motorcycle.
Jacket, Long Pants	Provide upper and lower body protection against abrasion and flying objects.	• Long sleeves and legs. • Made of heavy, durable fabric. • Bright in color and reflective. (Reflectorized patches can be sewn or taped on.) • Suitable for the weather (especially rain or low temperatures). The distraction of being stung by an insect or hit by a stone kicked up by the vehicle ahead is extremely dangerous. Being cold, wet, and stiff is also distracting and reduces the operator's ability to maneuver the motorcycle. Wearing improper clothing can be dangerous.
Motorcycle Safety Equipment		
Windshield	Provides upper body frontal protection from flying objects and weather.	
Fairing	Provides upper and lower body protection from flying objects and weather and streamlines the motorcycle.	
Safety Bars (Crash Bars)	Protect the feet and legs of the cyclist, as well as the motorcycle engine, in the event of a spill.	

2. Display

   Have examples of each item of safety equipment and apparel available. If possible, have items made by different manufacturers. Invite students to inspect and compare the items.

D. Supplementary Activities

1. Show a film or filmstrip on motorcycle controls and devices or safety equipment and apparel, such as one of the following:

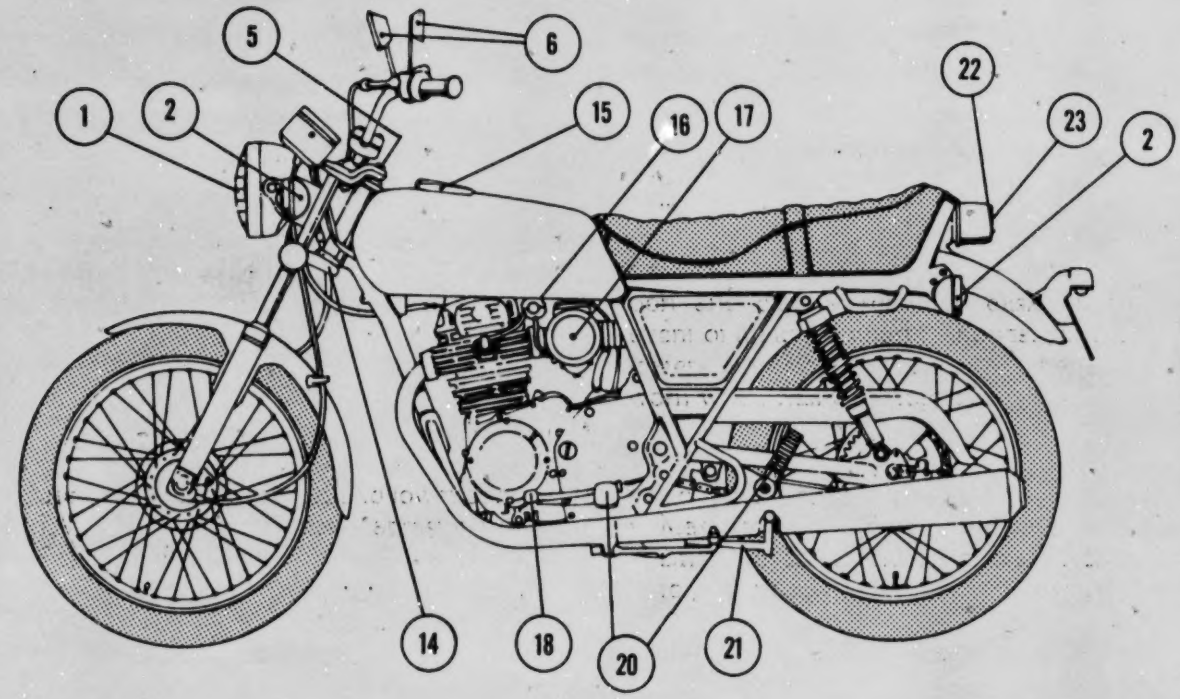
   - *Helmets* (Visucom)
   - *Honda Safety Film Series: Background to the Motorcycle*
   - *Motorcycle Controls* (Unit 2 Filmstrip, MSF)
   - *Motorcycle Driving Tactics* (Cahill, ODHS, KSU)
   - *Motorcycle Safety and Courtesy in Traffic* (Centron, KSU)
   - *Motorcycle Safety Tips* (Pyramid, U. of Ill.)
   - *Motorcycle: Sharing the Road* (Enc. Brit., Ind. U.)
   - *Riding the Motorcycle* (Unit 3 Filmstrip, MSF)
   - *Stay Alive, Stay Alert* (United Research Training)
   - *The New Ride* (Honda)
   - *Unit II Film,* Parts A, B, and C (Kawasaki)
   - *Unit III Film* (Kawasaki)

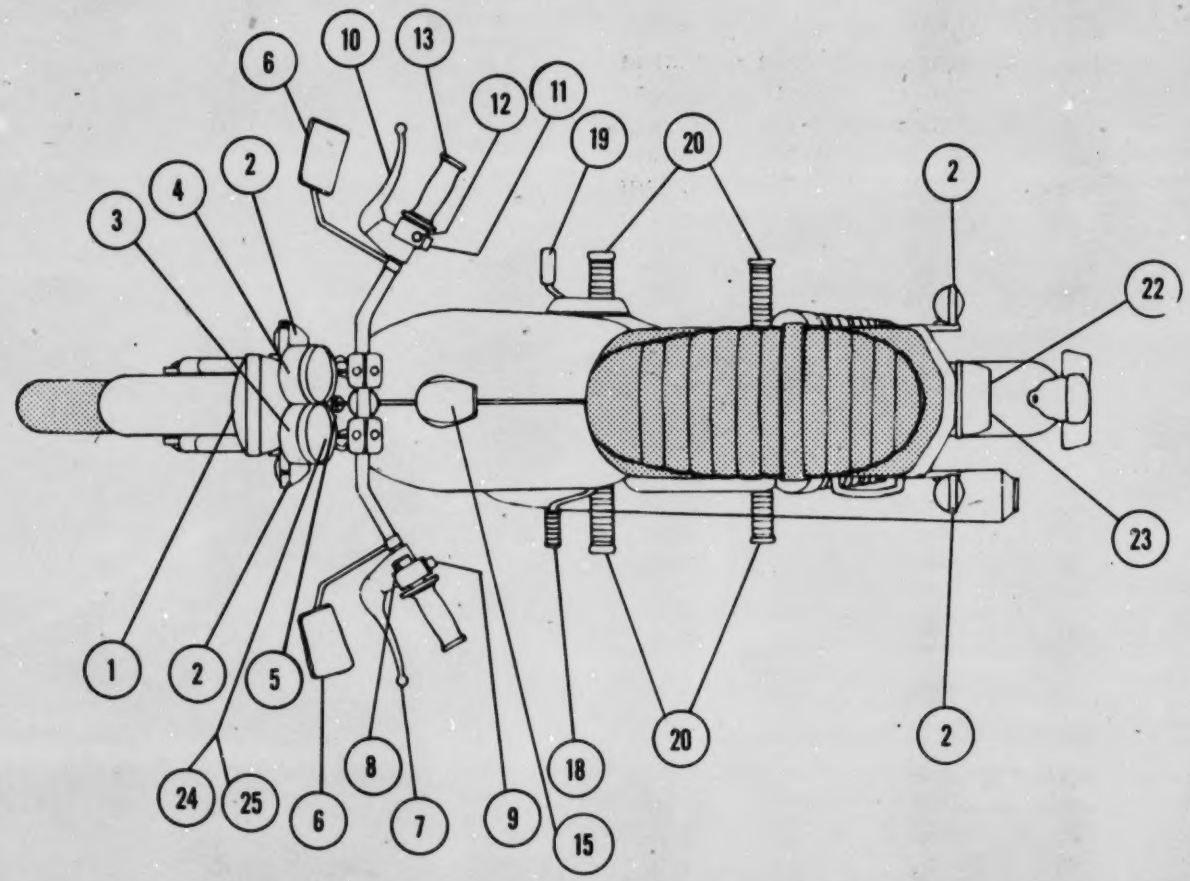
2. Invite a motorcycle dealer to demonstrate to the class the types and proper use of motorcycle safety apparel.

3. Have the students review and discuss promotional literature on safety equipment and apparel.

4. Provide copies of Resource Sheet 4, "Motorcycle Helmet Facts," to the students. Review and discuss with the students the allegations and facts contained in the handout.

Illustration 1





Key to Illustration 1

1. headlight
2. turn signal
3. speedometer
4. tachometer
5. ignition switch
6. mirror
7. clutch lever
8. turn signal switch
9. horn
10. starter
12. kill switch
13. throttle
14. fork lock
15. fuel filler cap
16. fuel supply valve
17. choke
18. shift lever
19. rear brake pedal
20. foot pegs
21. stand
22. taillight
24. odometer
25. trip meter

RESOURCE SHEET 4

Motorcycle Helmet Facts*

It has been claimed that helmets do not reduce head injuries but, rather, cause them and that helmets increase the likelihood of crashes by interfering with vision and hearing. Such claims have been very effective in causing helmet legislation to be repealed. This in turn has resulted in a great reduction in helmet usage. Such claims can be proven or refuted only by medical and other scientific research. Such research involves complicated questions that must be addressed most carefully and from a completely scientific viewpoint.

The following are general facts based on scientific research related to helmet usage.

Helmet design, especially in relation to energy absorption capabilities, is not the result of arbitrary decisions. Rather, it is the result of a sophisticated scientific technique whose sole objective is head protection. The design, of course, assumes that the helmet will be worn properly.

According to research being done by the multidisciplinary accident investigation team at the University of Southern California, of the 471 cases studied, there were no injuries to the head in approximately 40 percent of cyclists who wore helmets. Even in the two fatalities in the helmeted group, which were caused by severe injuries to other parts of the body, the heads were uninjured.

The number of deaths due to motorcycle accidents has risen to about 3,000 per year. Motorcycle deaths occur at more than three times the rate at which deaths occur in automobile crashes.

About 80 percent of motorcycle crash injuries are injuries to the head; the chance of sustaining a fatal head injury is two-thirds greater for an unhelmeted cyclist.

One study indicates that fatal or serious head injury is three times greater for non-helmeted motorcyclists than for helmeted cyclists.

In the ongoing battle to repeal mandatory helmet laws in the various states, the issue of the constitutionality of helmet laws was enlarged to allege that helmets were ineffective or, in fact, injurious. Some of the allegations against helmets and the findings that refute each allegation follow:

Allegation:

Helmets increase the likelihood of crashes by interfering with peripheral vision and hearing.

Facts:

A NHTSA study has proven that full-coverage helmets restrict horizontal vision by less than three percent as compared to that of an unhelmeted cyclist. All approved helmets exceed 180° field of vision, well above the minimum required by state licensing agencies for operators of motor vehicles (the minimum is 140° total peripheral vision in the horizontal plane).

*Adapted from the report of the American Medical Association Conference on Medical Aspects of Head Protection for Cyclists, Washington, D.C., April 14, 1977. Used with permission of the American Medical Association.

Motorcycles can create noise at 105 decibels. In order for other sounds to be heard by a cyclist they must be louder than the noise from the cycle. Consequently, as long as the rider can hear the motorcycle itself while wearing a helmet, he or she can hear other, louder sounds (that is, those greater than 105 decibels).

The helmet does reduce the loudness of both the sound (signal) of interest and the motorcycle noise proportionately; but it does not alter the signal-to-noise ratio between the two sounds. Critical traffic signals therefore are not lost and, in fact, may be enhanced because the critical sounds become louder when wind noise is minimized.

Allegation:

Helmets cause cervical (neck) spine injuries.

Facts:

Cervical spine injuries are possible, whether or not the cyclist is wearing a helmet, depending upon the circumstances of the accident. But helmets do not of themselves contribute to or worsen such injuries. Based upon currently available evidence, the likelihood of neck injury being caused by a helmet is almost nonexistent; where it has occurred, the resulting injury has been no more than a minor sprain. There is no evidence to support the contention that a helmet, if properly fitted and properly worn, causes head or neck injury as a result of head rotation.

Allegation:

Helmets cause injuries to the clavicle.

Facts:

Clinical examination of cases involving clavicle injuries indicates that these injuries result from the impact of the elbow or arm with an exterior object, thus forcing a transfer of energy to the clavicle. The injury patterns in these cases show clearly that such injuries could not be caused by the helmet.

Allegation:

Chin straps and chin cups on helmets cause neck injuries.

Facts:

The chin strap as presently designed is not a causative factor in neck injury, if properly worn. There is evidence to show that, even with a force at the breaking strength of over 600 pounds (which is a much greater strap loading than is experienced in most motorcycle crashes), the most significant injury will be a minor abrasion.

Chin cups do move the helmet retention system forward, thereby decreasing the ability of the chin strap to retain the helmet during a crash. For this reason, the Safety Helmet Council of America strongly opposes the use of chin cups.

Allegation:

The weight of helmets causes or increases neck injury and produces fatigue and discomfort.

Facts:

The weight of the helmet per se is not nearly so important to comfort as the center of gravity. If the center of gravity of the helmeted head is basically the same as that of the head unhelmeted, the wearer should not experience injury. In contrast with automobile crashes, where the body is restrained, the body of the cyclist can move along with the head and neck. Therefore, the weight of the helmet added to the head will not intensify stress on the neck. Automobile race drivers, whose helmet weight was increased considerably several years ago, and where this information is monitored closely, do not show any increase in neck injuries.

Thickness of the helmet is a more important characteristic than weight, since performance upon impact is enormously different in helmets with as little as ¼" difference in thickness. With regard to rider fatigue, there is no known research on effects of heavier vs. lighter helmets, but there are case studies and personal interviews indicating that riders are able to adjust easily to any helmet within a several pound differential, and do not experience problems directly related to helmet weight.

Allegation:

Helmets can cause hearing damage.

Facts:

To the contrary, in the normal traffic stream the helmeted cyclist is subjected to noise at only 93 decibels, whereas the unhelmeted cyclist is subjected to 105 decibels. While hearing injury can result from continuous exposure even at the lower rate, the allegation that helmets are responsible for hearing loss is patently false.

Allegation:

Helmets are so uncomfortably warm that they are hazardous to wear.

Facts:

It is true that the helmet does cause a certain amount of discomfort during warm weather. However, there is no documentation that this discomfort increases accident risk. In fact, in tests conducted in Southern California desert races where the ambient temperature reaches 120°F., current-design helmets actually produced a cooling effect.

LESSON 3. Preparing to Ride

Task

Develop basic starting and operating skills for entry-level motorcycle riding.

Objectives

Given a motorcycle, specify the proper sequence of steps, and correctly demonstrate the appropriate procedures for completing the following maneuvers:

1. mounting and dismounting the motorcycle,
2. walking the motorcycle while astride,
3. using the "pushing buddy" system both as the rider and as the buddy,
4. starting and stopping the engine and parking the motorcycle,
5. finding the friction point of the clutch,
6. riding the motorcycle in a straight line in first gear at a maximum of ten mph, and
7. stopping the motorcycle using the rear brake.

Materials

Required:

Motorcycles (suggested minimum: one for every two students)

Range and cones (see Range Set-Up on next page)

Safety apparel for every student (either the school or the students must provide helmets, eye protection, gloves, boots, jackets, and long pants)

Range cards 1 through 5 (Appendix G)

Optional:

Films or filmstrips, as listed in Activity G.1

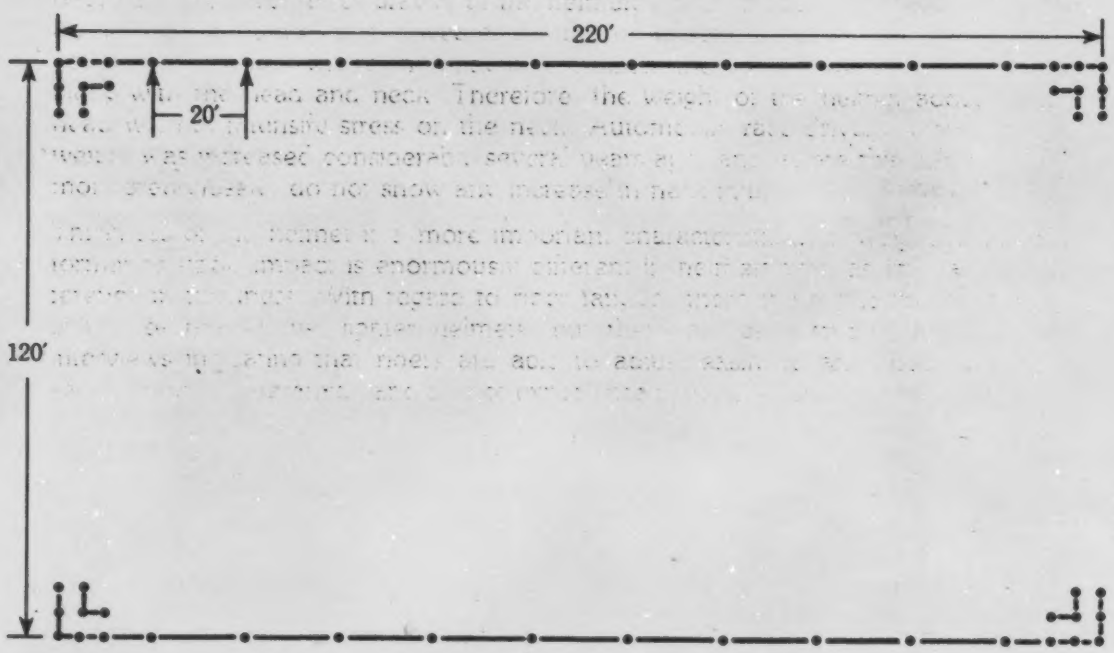
Projector and screen for films or filmstrips

References

The following references, listed in Appendix I, may provide additional information related to this lesson: 1, 7, 10, 12, 18, 25, 29, 30, 32.

Range Set-Up

Using the basic range set-up presented in the introduction as a basis, set up one pair of cones on opposite sides of the perimeter for each motorcycle being used, as diagrammed below.



Instruction

A. Mounting and Dismounting

1. Demonstration

Demonstrate and explain the proper sequence of steps for mounting and dismounting a motorcycle, as outlined below. Point out the safety tips as noted in the outline.

Mounting:

a. Stand on the left side of the motorcycle.

b. Grasp the handlebars.

c. Mount the motorcycle.

d. Release the stand.

e. Assume the correct riding position.

Note: Maximum comfort and control are achieved by being able to reach all the controls while seated and upright. Adjust the mirrors for this posture.

Dismounting:

a. Set the stand.

b. Dismount to the left.

c. Balance the motorcycle.

d. Lean the motorcycle on the stand.

Note: If the motorcycle is on an incline, it should be placed in first gear so that it does not roll.

2. Student Performance

Using Range Card 1, have students mount and dismount the motorcycles according to the demonstrated sequence of steps. Be sure that all students wear the proper safety apparel and that there is enough room between vehicles to avoid hitting each other if one falls over. Stress the following:

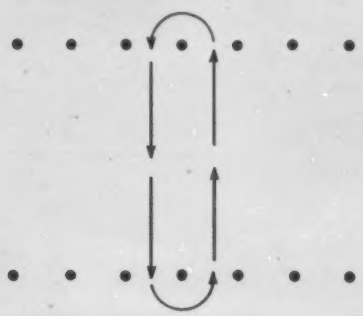
- the importance of wearing a helmet
- the importance of controlling and balancing the motorcycle to prevent its falling over
- the proper sequence of steps

B. Walking the Motorcycle While Astride

1. Demonstration

Using two opposite cones on the range perimeter, demonstrate and explain the proper sequence of steps in walking the motorcycle while astride, as outlined and diagrammed below. Point out that this activity helps the student learn how to balance the motorcycle while in motion.

- Mount the motorcycle.
- Check to be sure the vehicle is in neutral.
- Starting at one cone, walk astride the motorcycle to the target cone. Keep head and eyes up.
- Stop the motorcycle using the rear brake.
- Dismount.
- Turn the motorcycle around the cone.
- Remount and walk astride the motorcycle back to the starting point.



2. Student Performance

Using Range Card 2, have students perform the maneuver just demonstrated. Check performance to see that each student:

- keeps head and chin up and
- maintains balance.

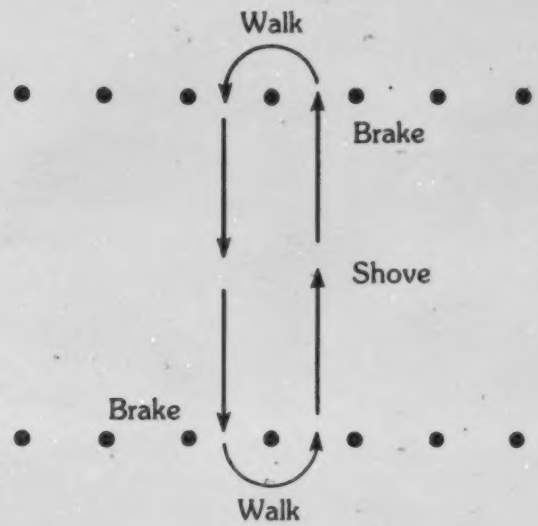
Note: Balance problems at this point may indicate a student will need extra practice.

C. "Pushing Buddy" System

1. Demonstration

Set the cones the same as in the previous activity. With the help of an assistant or student, demonstrate and explain the steps of the "pushing buddy" system, as outlined and diagrammed below. Point out that this exercise, like the previous one, helps the student learn to balance the motorcycle while in motion.

- Rider mounts the motorcycle near the first cone and sits with head and
- eyes up, elbows in, both feet on the pegs, knees against the tank, and
- good balance.
- Buddy pushes from behind, toward the target cone.
- Buddy stops pushing about halfway to the target cone.
- Rider stops at the target cone using the rear brake.
- Rider turns the motorcycle around the cone while still astride it.
- Rider dismounts and exchanges roles with buddy.
- New rider and buddy repeat the sequence back to the starting cone.



2. Student Performance

Using Range Card 3, have pairs of students perform the maneuver just demonstrated. Check for the following in each rider's performance:

- keeps head up, eyes looking ahead
- places both feet on pegs
- assumes good posture, knees in
- maintains balance
- rides a straight line
- stops smoothly

D. Starting and Stopping the Engine and Parking the Motorcycle

1. FINE-C

Explain FINE-C as an easily memorized phrase for a prestart operation, formed by the first letter of each part to be checked in that operation: **F**uel, **I**gnition, **N**eutral, **E**ngine kill switch, and **C**hoke.

2. Demonstration

Demonstrate and explain the sequence of steps to use in starting and stopping a motorcycle engine and parking it, as outlined below. Stress the safety points as noted.

Starting the Engine:

- Mount the motorcycle.
- Check FINE-C:
  a. **F**uel
  b. **I**gnition
  c. **N**eutral
  d. **E**ngine kill switch
  e. **C**hoke
- Set the kickstart lever.
- Set the throttle.
- Kickstart.
  (The engine should start at this point. If it does not start, check FINE-C, spark plugs, and fuse, and consult the operator's manual.)
- Fold in the kickstart lever.
- As the engine warms up, gradually reduce the choke.
- Turn on the headlight.
  Note: For safety, always ride with the headlight on. In some states (but not Ohio) this is mandatory.

Stopping the Engine and Parking:

- Turn off the headlight.
- Turn off the fuel supply valve.

- Set the stand.
  (If any of the motorcycles have center stands, demonstrate setting such a stand.)
  Note: Using the side stand on a soft surface is dangerous. Place a flat piece of wood or other solid material under the stand on soft surfaces.
- Dismount and park.
  (Demonstrate how to park on the street, backed in, with the rear wheel against the curb.)
- Lock the forks.

  Note: Locking the forks should be made a habit for security.

3. Student Performance

   Have students perform the operations just demonstrated.

   Note: It is important to be supportive during this performance phase; for many novices, starting and stopping the engine is a critical milestone in the course.

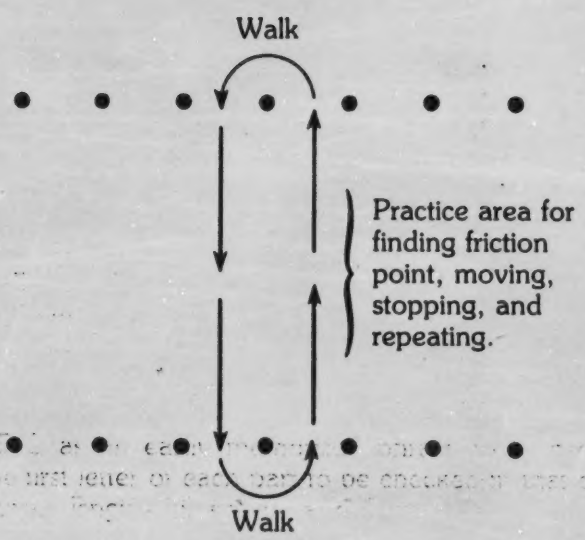
E. Finding the Friction Point

1. Demonstration

   Define the friction point as the point at which the clutch engages the transmission and engine. Demonstrate and explain the sequence of steps in finding the friction point, as outlined and diagrammed below.

   Note: This is another area of potential difficulty for novices. Patience and support are helpful here.

   - Mount the motorcycle.
   - Start the engine.
   - Squeeze the clutch to release it. Shift to first gear by either pushing down on the shift lever or lifting up on the shift lever with the toe of the shoe.
   - Partially release the clutch and operate the throttle.
     Note: As beginners, students should never fully release the clutch, but should keep the clutch at the friction point to move the motorcycle.
   - Notice the rpm drop as the engine engages.
     Note: The friction point is felt. It takes practice to become able to make smooth starts.
   - With feet on the ground for balance, let the engine pull the motorcycle ahead a few feet. (If the engine stalls, shift to neutral, restart the engine, and try again.)
   - Pull in the clutch and stop with the front brake.



2. Student Performance

Using Range Card 4, have students practice finding the friction point. Have them repeat the sequence from one target cone to the other, walk the cycle around the cone, and repeat the sequence back to the starting point. Each student should be given ample opportunity to practice this skill in order to become familiar with the feel of the friction point. Stress the fact that the friction point is felt and cannot be determined by watching hands or feet.

In the beginning, stand in front of the motorcycle, on the clutch side, with a hand in front of the clutch in case the motorcycle gets away from the student. Do not let students proceed alone until it is clear that they have control of the cycle.

Check performance to see that the student:

- does not fully release clutch
- starts smoothly
- stops smoothly
- keeps head and eyes up

F. Riding and Stopping the Motorcycle

1. Demonstration

Demonstrate and explain the steps in riding the motorcycle in a straight line and stopping, as outlined and diagrammed below.

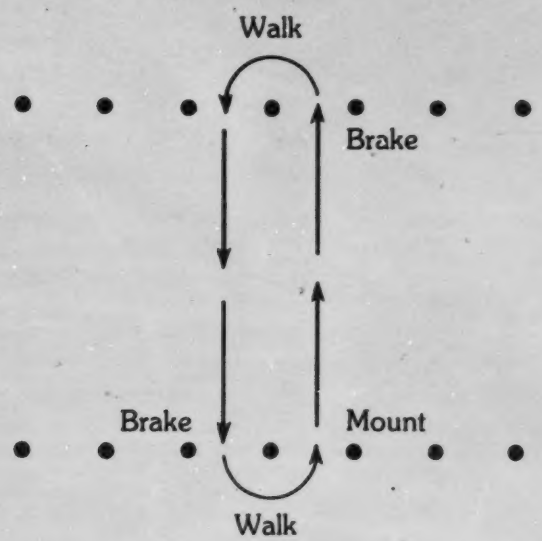
Riding the motorcycle:

- Mount the motorcycle.
- Start the engine.
- Begin to walk the motorcycle.

- Find the friction point.
- Apply the throttle.
- Release the clutch gradually.
- Accelerate gently, to no more than ten mph.
- Balance and keep feet on the pegs.
- Keeping head and eyes up, steer toward the target cone.

Stopping the motorcycle:

- When near the target cone, apply the rear brake to stop.
- Squeeze the clutch before stopping, to prevent stalling.
- Place feet on the ground and balance.
- Shift to first gear.
  Note: On many motorcycles it becomes easier, as students advance, to shift before the vehicle has stopped.
- Turn the motorcycle around, return to the starting cone, using the same sequence for riding and stopping.



2. Student Performance

Using Range Card 5, have students perform the maneuver just demonstrated. Walk alongside each student for at least the first ride.

Check riding performance to see that each student:

- starts and stops smoothly
- keeps head and eyes up
- rides in a straight line
- keeps feet on pegs
- maintains balance

Check stopping performance to see that each student:

- stops smoothly
- uses rear brake only
- keeps head and eyes up
- maintains balance
- does not stall
- shifts to first gear upon stopping.

G. Supplementary Activity

1. Show a film or filmstrip on basic riding skills, such as one of the following:

   - *Behind the Handlebars, Unit I: The Residential Rider* (Honda, ODHA)
   - *Honda Safety Film Series: Background to the Motorcycle*
   - *Motorcycle Controls* (Unit 2 Filmstrip, MSF)
   - *Motorcycle Safety Tips* (Pyramid, U. of Ill.)
   - *Not So Easy* (Film Fair, ODHA)
   - *Rider Skill Development Program* (NHTSA)
   - *Riding the Motorcycle* (Unit 3 Filmstrip, MSF)
   - *Unit IV Film* (Kawasaki) (BW)

   Point out and discuss portions of the film that show proper procedures for mounting, dismounting, walking the cycle astride, the "pushing buddy" system, starting and stopping the engine, finding the friction point, and riding in a straight line.

LESSON 4. Riding

Task

Continue to develop entry level skills in starting, stopping, turning, and shifting.

Objectives

Given a motorcycle, specify the proper sequence of steps and correctly demonstrate the appropriate procedures for completing the following maneuvers:

1. turning to the left and to the right (gradual and sharp turns),
2. shifting up and down at various speeds, and
3. stopping the motorcycle using front and rear brakes together, using engine braking, and combining engine braking with front and rear brakes.

Materials

Required:

Motorcycles (suggested minimum: one for every two students)

Range and cones (see Range Set-Up on next page)

Safety apparel for every student (either the school or the students must provide helmets, eye protection, gloves, boots, jackets, and long pants)

Range cards 6 through 11 (Appendix G)

Optional:

Films or filmstrips, as listed in Supplementary Activity D.1.

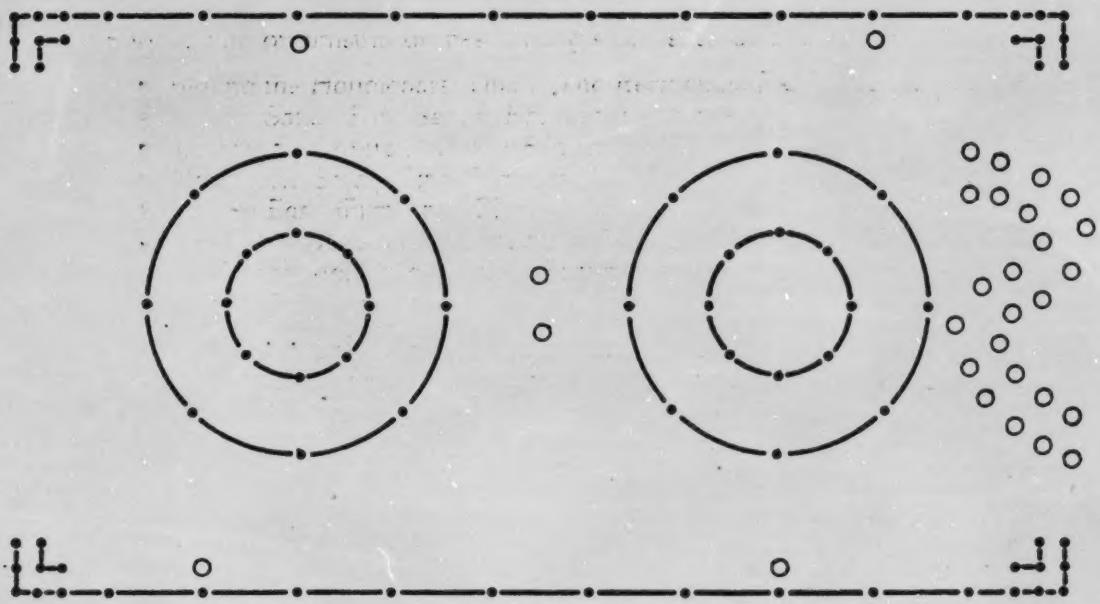
Projector and screen for films or filmstrips

References

The following references, listed in Appendix I, may provide additional information related to this lesson: 1, 7, 10, 12, 18, 25, 29, 30, 32.

Range Set-up

Using the basic range set-up as the basis, set up all the cones diagrammed below. Blackened cone symbols are for Activities A.1 through A.5. The spiral and center cones (not blackened) are optional for Activity A.6.



Instruction

A. Turning

1. Rules and Techniques

Explain and discuss the following rules and techniques for turning:

- Signal your intention to turn.

Note: Signals include

a. hand
b. electric turn signals
c. headlight and taillight
d. brake light

Hand signals are given with the left arm and hand only. They are the same as for driving. Remember that with one hand off the handlebars steering control is greatly reduced. Hand signals are difficult to see. They are best used in conjunction with electric signals.

- Slow down before the turn.
  Note: Braking during a turn is very dangerous. If it is necessary to reduce speed while turning, brake very carefully with the rear brake.
- Lean body into the turn.
- Keep knees against the fuel tank.
- Keep head and eyes up, looking into the turn.
- Keep feet on the pegs.
- Cover the rear brake.
- Accelerate coming out of the turn.
  Note: If street is wet or slick, accelerate very carefully.

2. Demonstration: Gradual Turns

   Using Range Card 6, demonstrate the rules and techniques discussed in the previous activity by means of the exercise outlined and diagrammed below.

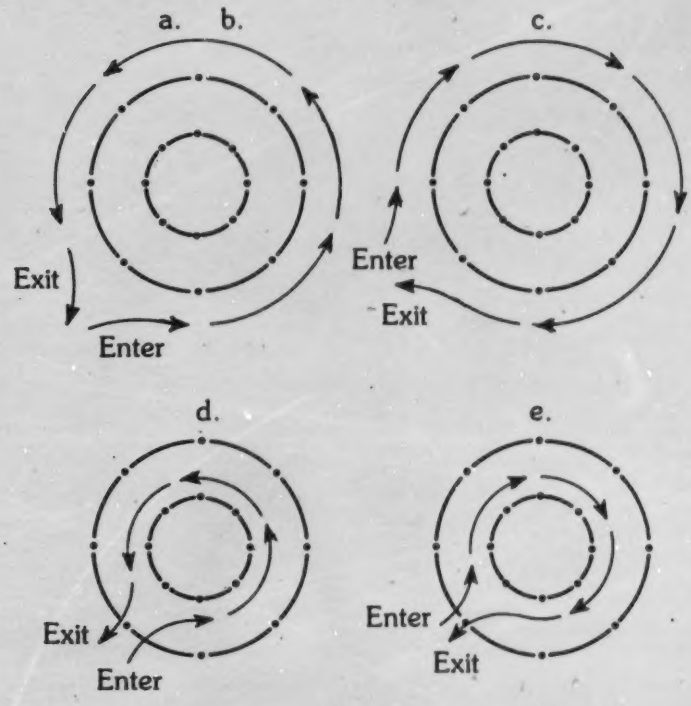
   a. Enter one of the large circles, moving to the left.

   b. Ride around the circle, keeping within three feet of the cones, on the outside. Stay in first gear and control the speed with the throttle and rear brake.

   c. Leave the circle, then re-enter moving to the right and ride around the circle as before. Leave the circle.

   d. Enter the small circle moving to the left, repeat the maneuver, and leave.

   e. Re-enter the small circle moving to the right, repeat the maneuver, and leave.



3. Student Performance: Gradual Turns

Using Range Card 6 and one or both sets of circles, depending on the size of the class, have the students perform the maneuver just demonstrated. Have the students complete each circle five times in each direction, with these precautions:

- Up to six riders ride the large circles, well spaced.
- Up to three riders ride the small circles, well spaced.
- All riders leave a circle before the first re-enters going in the opposite direction.
- All riders leave the large circle before the first enters the small circle.
- If a motorcycle stalls, the student moves it inside the circle.

Check performance to see that each student:

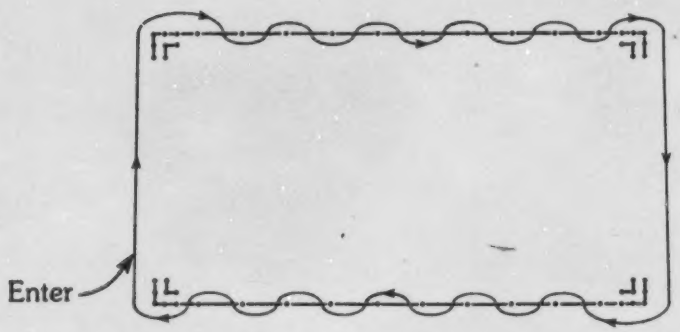
- circles five times to the left and five times to the right on the large circle;
- operates the clutch, throttle, and brake smoothly;
- stays within three feet of the cones;
- leans with the motorcycle;
- keeps head and eyes looking forward around the circle;
- keeps knees against the fuel tank, feet on the pegs, and rear brake covered;
- accelerates coming out of the turn (leaving the circle); and
- repeats the maneuver and all techniques on the small circle.

4. Weaving Between Cones

For additional practice on gradual turns, demonstrate and have students perform the weaving exercise outlined and diagrammed below, incorporating all the techniques introduced in the first activity. Use Range Card 7.

a. Enter the range perimeter, moving to the left.

b. Circle the perimeter, weaving between the cones. Stay in first gear and control the speed with the throttle and rear brake.



5. Demonstration and Performance: Sharp Turns

When students are comfortable making gradual turns, demonstrate and have students perform the exercise outlined and diagrammed below. Use Range Card 8.

Note: The long side of the range is rather far to travel in first gear. If preferred, the range may be shortened for this exercise or this exercise may be used after students have learned to shift.

Circling the Range:

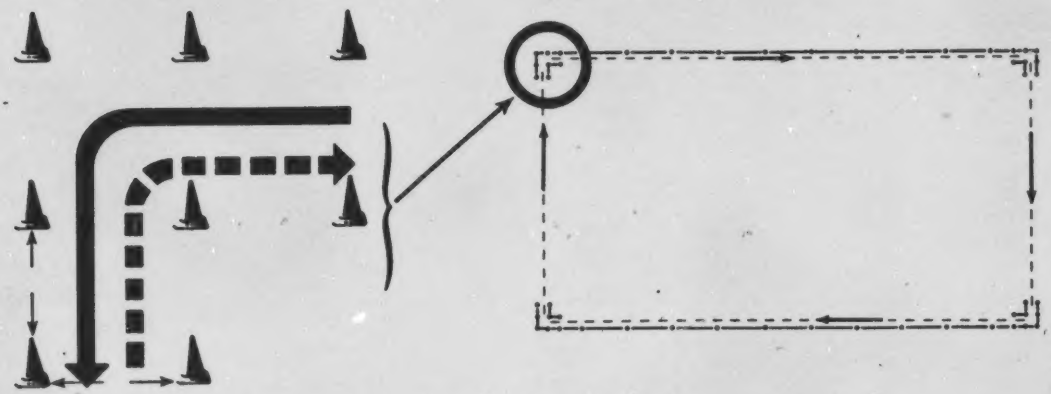
a. Enter the range perimeter, just inside the cones, moving to the left.

b. Circle the perimeter in first gear, passing between the two sets of cones as each corner is turned. The left knee may be dropped off the fuel tank on the turns.

c. Signal all turns. Control the speed with throttle and rear brake.

d. Leave the range and re-enter moving right. Circle the perimeter as before.

Note: The last rider must leave the circuit moving left before the first enters moving right.



Check performance to see that each student:

- completes the exercise as instructed;
- maintains a safe distance behind the rider in front;
- leans with the motorcycle;
- operates the throttle, brake, and clutch smoothly;
- performs without excessive speed changes or movement of handlebars;
- brakes before turns and accelerates coming out of turns; and
- maintains proper positions of head, eyes, knees, and feet.

6. Optional Practice Exercises

For additional practice in sharp turns, demonstrate and have students perform the two optional exercises outlined and diagrammed below. Use Range Card 9.

Spiral Maneuver:

The spiral maneuver is a good exercise to develop balance and control at low speeds.

a. Start from a complete stop.

b. Ride between the "S" shaped rows of cones without hitting them.

c. Keep both feet up. Keep speed steady and maintain firm control.

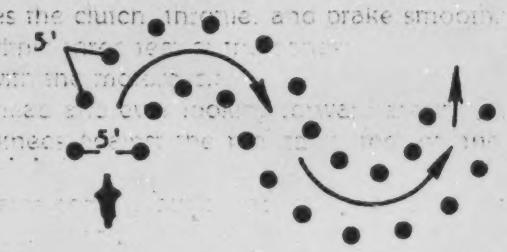


Figure Eight (for up to 12 riders):

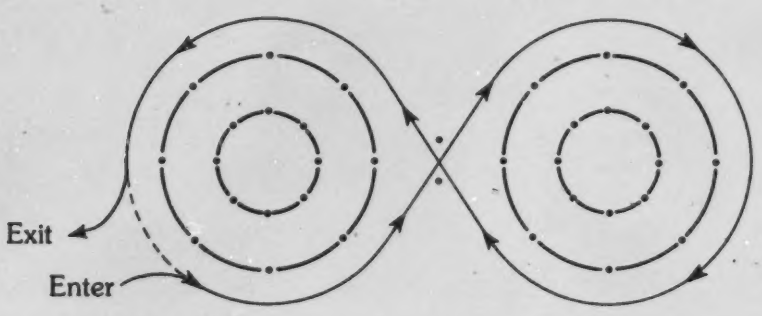
The figure eight incorporates turning, speed control, rider-to-rider communication, and decision making.

a. Proceed through the figure eight course.

b. Judge the gap at the crossover point as other riders cross your path, and proceed or yield accordingly.

Note: The instructor stands at the crossover point to control any conflicts.

c. Lean with the motorcycle and keep head and eyes up.



B. Shifting

1. Demonstration

Demonstrate and explain how and when to upshift and downshift, as outlined below.

Upshifting:

When: A rider knows to upshift while accelerating by listening to the sound of the engine at higher rpm's and by reading the tachometer.

How:

- Squeeze the clutch.
- Close the throttle.
- Raise the gearshift lever to the top of the shifting stroke, using the toe.
- Allow the lever to return to neutral.
- Release the clutch slowly.
- Increase the throttle.

Downshifting:

When: A rider may downshift

- when going up and down hills
- when the engine is lugging
- to slow down
- before or after a turn.

How:

- Squeeze the clutch.
- Push down (or pull up) the gear shift lever with the toe.
- Increase the throttle as you slowly release the clutch.
  Note: A lower gear requires a higher rpm to match a given speed than a higher gear does.

2. Student Performance

Using Range Card 10, demonstrate and have students perform the shifting exercise outlined and diagrammed below.

Note: Set up additional perimeter cones as shown by the asterisks in the diagram under "Range Set-Up."

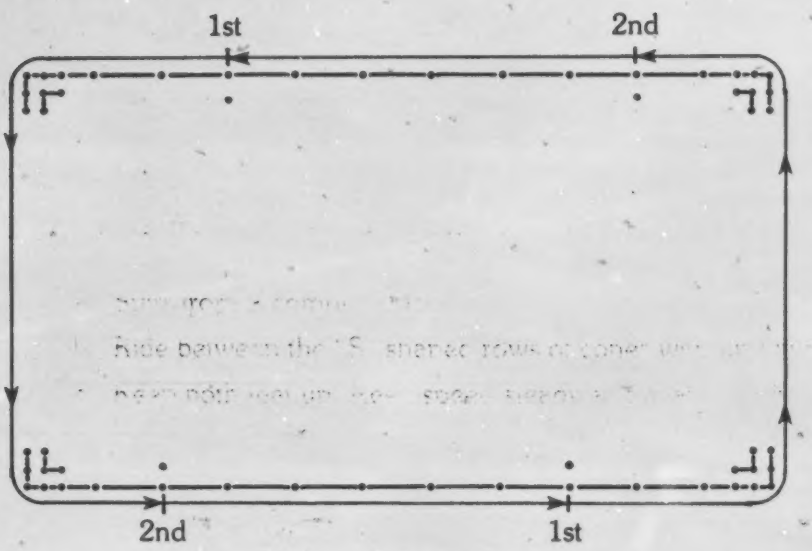
a. Enter the range perimeter outside the cones, moving counterclockwise.

b. Proceed around the course, upshifting to second on the straightaways and downshifting to first for the turns. (Closely spaced perimeter cones can be used as a guide to time upshifting and downshifting if necessary.) As students progress, add third gear on the straightaways.

   Note: Students may have a tendency to overshoot the corners of the range. This may be caused by a mistaken idea that one must downshift gradually through each gear before making the turn in first gear.

c. Leave the range, re-enter moving clockwise, and repeat the exercise.

Note: A student whose engine stalls should move to the inside of the course.



Check student performance for:

- properly timed shifting
- smooth shifting
- adequate distance between riders
- proper body position
- head and eyes front and forward

C. Braking

1. Demonstration

Demonstrate and explain how to execute the three types of braking outlined below.

Using front and rear brakes together:

- Close the throttle.
- Apply the rear and front brakes simultaneously.
- Disengage the clutch when the speed is below ten mph.
- Stop smoothly.

Note: It is extremely dangerous to use only the front brake:

- when the roadway is slippery
- when the front wheel is turned to the side
- when the motorcycle is leaning into a turn

Extreme care should be exercised in these situations.

Using engine braking:

- Downshift one gear.
- Close the throttle.
- Allow the engine rpm's to drop until engine braking becomes minimal.
- Downshift to the next gear and repeat.

Using engine braking, front, and rear brakes together:

- Combine the above two methods.

  Note: By using a combination of engine braking and the front and rear brakes, it is possible to maintain precise control of the vehicle speed.

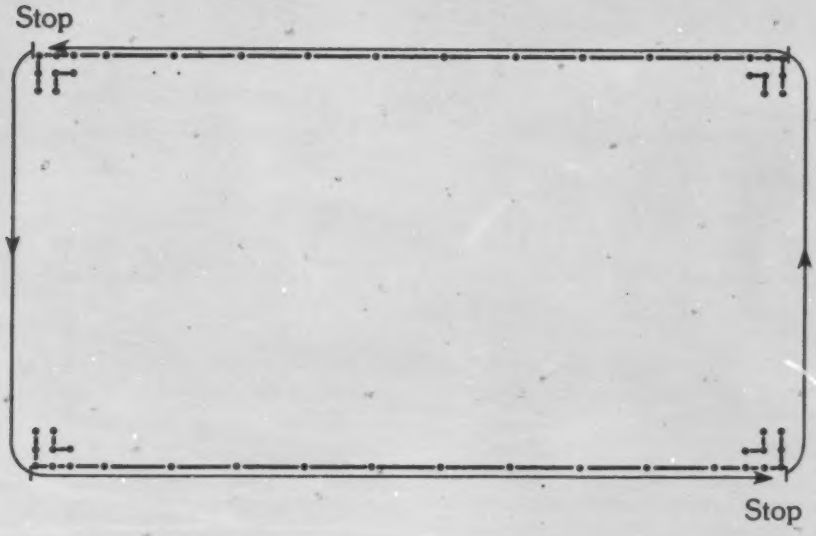
2. Student Performance

Using Range Card 11, have students perform the exercise outlined and diagrammed below.

a. Enter the perimeter of the range, outside the cones, moving counter-clockwise.

b. Upshift to at least second gear on the straightaways. Do not exceed 20 mph.

c. Downshift at the corners and stop at diagonal corners using both brakes.



Check performance to see that each student:

- upshifts and downshifts
- uses both brakes
- stops smoothly
- does not skid

D. Supplementary Activity

1. Show and discuss a film or filmstrip on turning, shifting, and braking (or any portion of this set of skills), such as one of the following:

   - *Basic Motorcycle Maneuvers* (Unit 4 Film, MSF)
   - *Behind the Handlebars, Unit II: Meeting Traffic* (Honda, ODHS)
   - *Honda Safety Film Series: Operation of the Motorcycle*
   - *Motorcycle Safety and Courtesy in Traffic* (Centron, KSU)
   - *Motorcycle Safety Tips* (Pyramid, U. of Ill.)
   - *Testing Motorcycle Operating Skill* (MSF)
   - *Uneasy Rider* (AAA, ODHS)
   - *Unit V Film* (Kawasaki)

LESSON 5. Intermediate Riding Skills

Tasks

Develop the skills and knowledge necessary to operate a motorcycle safely in traffic.

Objectives

Given a motorcycle, identify and demonstrate or describe the following procedures:

1. using the SIPDE process,
2. using the three-second rule,
3. using the various defensive driving techniques appropriate to safe motorcycle operation,
4. riding in groups,
5. passing and lane changing, and
6. carrying passengers and loads

Materials

Required:

Slides, still photographs, films, or filmstrips depicting hazardous traffic situations

Motorcycles (suggested minimum: one for every two students)

Range and cones (see Range Set-Up on next page)

Safety apparel for every student

Transparencies or student handouts made from Resource Sheets 5, 6, 7, and 8 (pp. 62-66)

Overhead projector (if transparencies are used)

Planned on-street route for street practice

One instructor for every three students

Materials to load on motorcycles

Range Card 12 (Appendix G)

Optional:

Films or filmstrips, as listed in Supplementary Activity G.1

Projector and screen

References

The following references, listed in Appendix I, may provide additional information related to this lesson: 1, 7, 10, 12, 14, 15, 16, 18, 25, 29, 30, 32.

Range Set-Up

Using the basic range set-up as a basis, only the perimeter cones are needed in this lesson. However, an on-street route should be planned in advance, as noted in Activity E.1.

Instruction

Note: It is important for each student to have mastered and be comfortable with the basic riding skills presented in Lesson 4 before beginning this lesson.

A. SIPDE

1. Discussion

Explain and discuss the purposes and steps of the SIPDE process, as outlined below. Point out the origin of the word SIPDE (the first letter of the main action word in each step in the process). Resource Sheet 5 may be used to make a transparency or student handouts to accompany this discussion.

Purposes:

- to minimize single hazards
- to separate multiple hazards
- to compromise in situations with two or more hazards

Steps:

a. **S**earch for anything with collision potential.

- Make sure the immediate path (four seconds ahead) is clear so that you are prepared for any emergency situations.
- Scan well ahead (twelve seconds) for collision potential or any developing emergency situations.
- Keep three or four seconds between your vehicle and the one ahead.
- Check to the sides and behind.

b. **I**dentify hazards and special conditions with collision potential.

c. **P**redict possible conflicts.

d. **D**ecide upon an appropriate course of action.

e. **E**xecute the necessary maneuvers.

2. Practice

Using slides, still photographs, films, or filmstrips depicting hazardous traffic situations, have students practice the SIPDE process and verbalize what they are seeing or deciding in each step.

B. The Three-Second Rule

1. Discussion

Explain and discuss the three-second rule, as outlined below. Resource Sheet 6 may be used to make a transparency or student handouts to accompany the discussion.

Note: It is safer for motorcyclists to use the three-second rule than the two-second rule used by automobile drivers. The three-second rule is valid at speeds up to 50 mph. Above 50 mph, the count-off time should increase to four seconds.

a. Select a fixed object close to the roadway ahead of the vehicle you are following.

b. Count off three seconds from the time the rear of the vehicle passes the object. (Count "one thousand one....")

c. The front of your motorcycle should not have passed the object before three seconds have elapsed.

2. Practice

Have students practice using the three-second rule on motorcycles by following each other around the perimeter of the range.

C. Defensive Driving Techniques

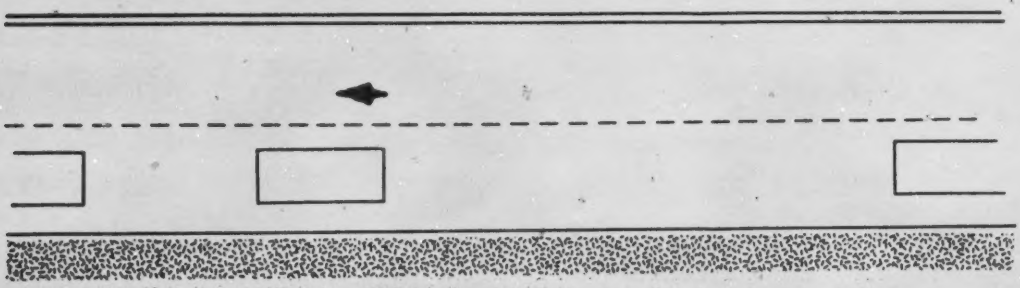
1. Discussion

Explain and discuss defensive driving techniques for motorcycle operators, as outlined below. Resource Sheet 7 may be used to make a transparency or student handouts to accompany the discussion.

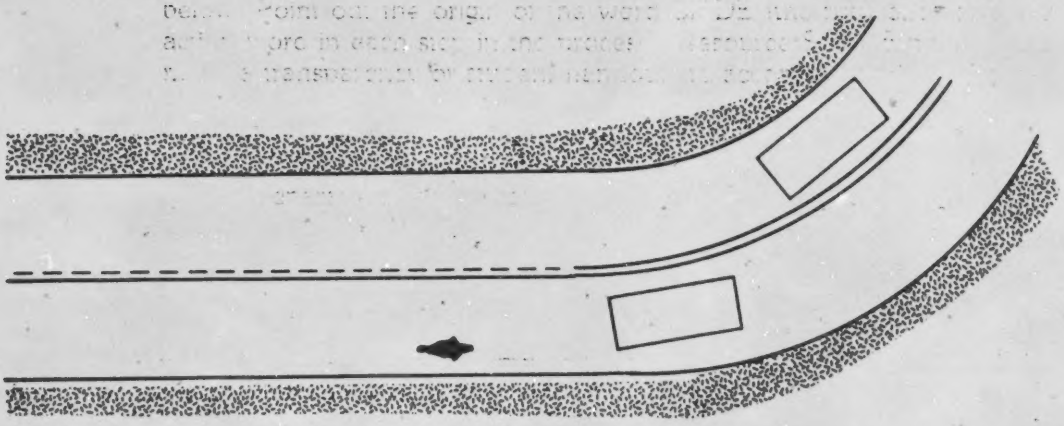
- Use the SIPDE process to minimize and separate hazards and to give yourself opportunity to compromise in hazardous situations.
- Use the three-second rule.
- Make yourself as visible as possible.

  Note: Many motorists involved in accidents with motorcyclists say they "just didn't see the motorcycle."
- Use reflective fabrics or tape on helmet, clothing, and motorcycle.
- Drive as if you were invisible, leaving yourself plenty of room to escape hazards. (Don't depend on the other drivers to see you.)
- Signal turns well in advance, several seconds before acting.
- Stay out of the blind spots of other vehicles.
- At intersections, drive as if you were invisible, always giving the other driver plenty of room and leaving yourself an escape from any critical situation.

  Note: Forty percent of motorcycle accidents involving another vehicle occur at intersections.
- Ride mainly in the left tire track.
- Stay to the right of the center of the lane (near the right tire track) when driving in the passing lane.



- Move to the right of the center of the lane (near the right tire track) to avoid oncoming vehicles that might cross the center line on a two-lane, two-way highway.



- Establish eye contact and pay attention to communications of other drivers.
- Do your utmost to communicate to other drivers where you are and when you intend to change your position.
- If another motorist signals an intention to change speed or position, give the motorist room and opportunity to act. Don't challenge the vehicle—you are smaller and more vulnerable.

D. Street Riding Skills

1. Demonstration: Lane Changing and Passing

Demonstrate and explain the techniques for changing lanes and passing another vehicle, as outlined below.

Changing Lanes

a. Check the mirror.

b. Signal.

c. Look over the left or right shoulder (toward the new lane).

d. Move laterally into the new lane.

Passing

a. Move to the left of the center of the lane (left tire track).

b. Check the mirror for rear traffic and check ahead for oncoming traffic.

Note: In convex mirrors, objects appear to be farther behind than they really are.

c. Signal.

d. Look over the left shoulder.

Note: Mirrors do not reveal everything, and convex mirrors distort distances. Head checks are extremely important.

e. Accelerate and move laterally into the oncoming lane.

Note: It is important to be familiar with the acceleration capability of the motorcycle before trying to pass in traffic.

f. Pass the vehicle.

g. Signal.

h. Look over the right shoulder.

i. Return to left of center (left tire track) of the proper lane.

2. Range Practice

Have students practice changing lanes and passing each other on the perimeter of the range, using the exercises described on the following page.

Lane Changing

a. Consider the range perimeter line the dividing line between two lanes of traffic (one inside and one outside).

b. Have all students ride in the same direction and practice changing lanes on the straightaways.

c. On the long straightaways, the rear rider in each pair passes the rider ahead (one pass per straightaway).

Note: If one or more automobiles are available, have students practice passing the automobiles.

3. Discussion: Riding in Groups

Explain and discuss the techniques for riding in groups, as outlined and diagrammed below. Use Resource Sheet 8 to make a transparency or student handouts to accompany the discussion.

General Rules

- Ride in small groups, no more than four or five together.

Note: A very large group disrupts traffic and can be separated too easily.

- Ride in staggered formation, as described below.
- Do not bunch up. When at a stop signal, wait in pairs, so as not to create a conflict with other traffic.

- Complete lane changes and other maneuvers independently, resuming the group formation as the maneuver is completed by each member.
- Select a leader, usually the most experienced rider in the group. The leader has the following responsibilities.

  a. Do not exceed the maximum speed of the least experienced rider.

  b. Maintain a larger following distance from the vehicle ahead than if riding alone.

  c. Scan the roadway ahead to anticipate any situations requiring action.

  d. Be sure that there is adequate time for all riders to complete leader-initiated actions. Followers should not have to hurry to avoid being left behind.

  e. Give signals early enough so that all riders know what is happening.

  Note: In addition to the standard turn signals discussed in Lesson 4, the following signals are useful for group riding.

  - Fist up, pumping up and down, means increase speed.
  - Hand down, flat, and pumping up and down, means decrease speed.
  - Pointing at road surface with finger means look for hazards.
  - Hand down and brought back edgewise to the rear means assume single file formation.
  - Pointing at engine with finger means malfunction.

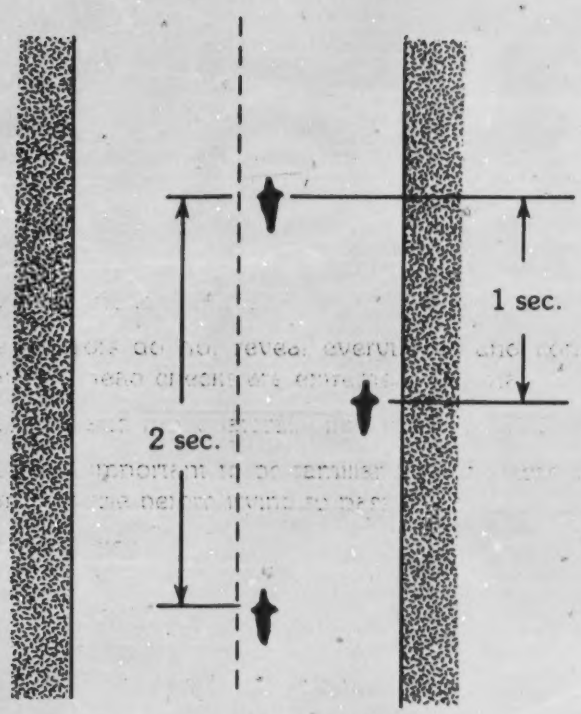
  f. Keep an eye on the following riders to detect stragglers for problems, especially after turns, lane changes, traffic signals, or other points where individuals might get separated from the group.

Group Formation

a. Do not ride side-by-side. Riding abreast of another vehicle limits the ability of both riders to make lateral position changes and evasive maneuvers.

b. Do use a staggered formation.

- First rider is to the left of the center of the lane (near the left tire track).
- Second rider is to the right of the center of the lane (near the right tire track), about one second back.
- Third rider is to the left, two to three seconds behind the first rider.
- Fourth rider is to the right, two to three seconds behind the second rider.



c. Use single file

- around sharp curves
- making turns at intersections
- in off-street areas
- on narrow roadways
- on exit and access ramps

Group Passing (two or more motorcycles)

a. Lead rider passes the vehicle, using the single cycle procedure, returns to original lane position, and continues ahead to open up a gap for the next rider.

b. Second rider moves to the left of the center of the lane (left tire track) for visibility.

c. Second rider passes the vehicle.

d. Second rider moves to the right of the center of the lane (right tire track) and moves ahead to open up a gap for the next rider.

e. The rest of the riders pass in the same manner, one at a time, returning to the staggered formation.

4. Range Practice

Have students practice group riding and passing on the range in groups of four in the same manner as they practiced individual passing. Each group passes either a car or two motorcycles simulating the length of a car. If only part of the group passes on one straightaway, the remaining riders wait until they reach the next straightaway.

E. On-Street Riding

1. Student Performance

Using Range Card 12, take the students onto the street to perform street riding skills, as listed below. In preparing for this activity, take the following precautions:

- Be sure that all students have their permits with them and that all cycles are legal for street use.
- Be sure that all students have and wear the proper safety apparel.
- In advance, plan a route that includes some traffic, lights, and other routine traffic situations.
- Maintain a ratio of one instructor to three students. A good starting arrangement is six students with one instructor leading and one instructor following.

Follow each rider periodically as he or she negotiates routine in-traffic situations. Evaluate individual and group performance of the following skills:

- SIPDE
- three-second rule
- defensive driving techniques
- riding in groups (formation, distance, and staying together)
- lane changing and passing (signaling, checking traffic, and completing pass or lane change smoothly and safely).

F. Passengers and Loads

1. Demonstration

On the range, demonstrate and explain techniques for riding as a passenger and for carrying loads, as outlined below.

Passengers

- Sit as close to the operator as is comfortable.

  Note: Passengers should be discouraged from sitting back over the rear wheel. For optimum stability, weight should be centered between the wheels.

- Clasp arms around the operator near the waist.
- Keep feet on the footpegs.
- Lean with the operator.

  Note: The passenger and operator should move as a single entity. Sudden and unpredicted passenger movement and shifts of weight can adversely affect handling and stability. Novice riders should not carry passengers.

Loads

- Position the load low and toward the center of the motorcycle.

  Note: Do not put much weight on the front fork or on a rear wheel luggage rack. Do not pile luggage high. Saddlebags are a good investment because they hold a lot and they position the weight low.

- Fasten the load securely.

  Note: Be very sure that luggage is secure. Check for looseness regularly. Falling luggage is dangerous for other roadway users in addition to being dangerous and inconvenient to the motorcyclist.

2. Student Performance

   Have students practice carrying passengers on the range, using any combination of exercises previously outlined.

   Note: Ohio law does not allow persons with temporary permits to carry passengers on the public streets.

   Check passengers' performance for proper position of body, arms, feet, and knees and leaning with the operator. Check operators' ability to maneuver with a passenger on the motorcycle.

G. Supplementary Activity

1. Show and discuss a film or filmstrip on SIPDE, IPDE, defensive motorcycle riding, or other aspects of street riding, such as one of the following:

   - *A System for the Road* (OTSEC, AAA)
   - *Attitude in Motion* (Honda)
   - *Basic Street Riding* (Unit 5 Film, MSF)
   - *Behind the Handlebars*, Unit II: *Meeting Traffic*, and Unit III: *Advanced Traffic* (Honda, ODHS)
   - *Eye that Cycle* (AAA, ODHS)
   - *Honda Safety Film Series: Operation of the Motorcycle*
   - *Increasing Riding Skills* (Unit 6 Film, MSF)
   - *It's Your Move* (Travelers)
   - *Licensing Operators of Two-Wheeled Motor Vehicles* (AAMVA)
   - *Motorcycle Driving Tactics* (Cahill, ODHS, KSU)
   - *Motorcycle In-Traffic Program* (MSF)
   - *Motorcycle Safety and Courtesy in Traffic* (Centron, KSU)
   - *Motorcycle Safety Tips* (Pyramid, U. of Ill.)
   - *Motorcycle: Sharing the Road* (Euc. Brit., Ind. U.)
   - *Not So Easy* (Film Fair, ODHS)
   - *Safety Rider* (Kawasaki)
   - *Stay Alive, Stay Alert* (United Research Training)
   - *The Expert Rider* (Kawasaki)
   - *Uneasy Rider* (AAA, ODHS)
   - *Unit VII Film* (Kawasaki)

RESOURCE SHEET 5

The SIPDE Process

The SIPDE process is a defensive driving technique to help the driver or rider anticipate and deal with traffic hazards. The word SIPDE is formed from the first letters of the words Search, Identify, Predict, Decide, and Execute.

Purposes:

- to minimize single hazards
- to separate multiple hazards
- to compromise in situations with two or more hazards

Steps:

a. Search for anything with collision potential.
   - Make sure the immediate path (four seconds ahead) is clear so that you are prepared for any emergency situations.
   - Scan well ahead (12 seconds) for collision potential or any developing emergency situations.
   - Keep three or four seconds between your vehicle and the one ahead.
   - Check to the sides and behind.

b. Identify hazards and special conditions with collision potential.

c. Predict possible conflicts.

d. Decide upon an appropriate course of action.

e. Execute the necessary maneuvers.

RESOURCE SHEET 6

The Three-Second Rule

The three-second rule is a simple method for establishing a safe, minimum following distance behind another vehicle.

It is safer for motorcyclists to use the three-second rule than the two-second rule used by automobile drivers. The three-second rule is valid at speeds up to 50 mph. Above 50 mph, the count-off time should increase to four seconds.

Steps:

a. Select a fixed object close to the roadway ahead of the vehicle you are following.

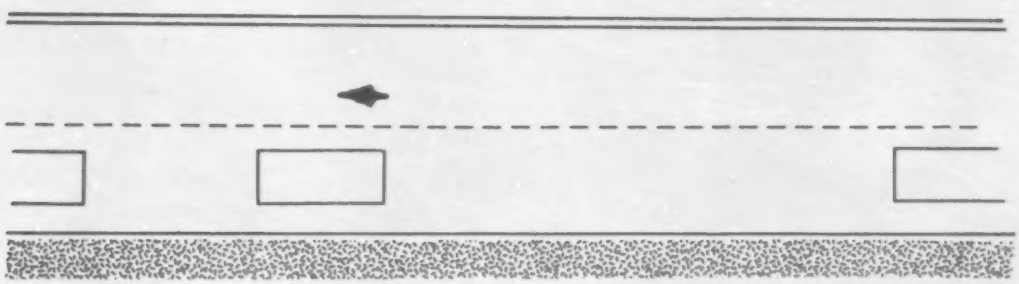
b. Count off three seconds from the time the rear of the vehicle passes the object. (Count "one thousand one....")

c. The front of your motorcycle should not have passed the object before three seconds have elapsed.

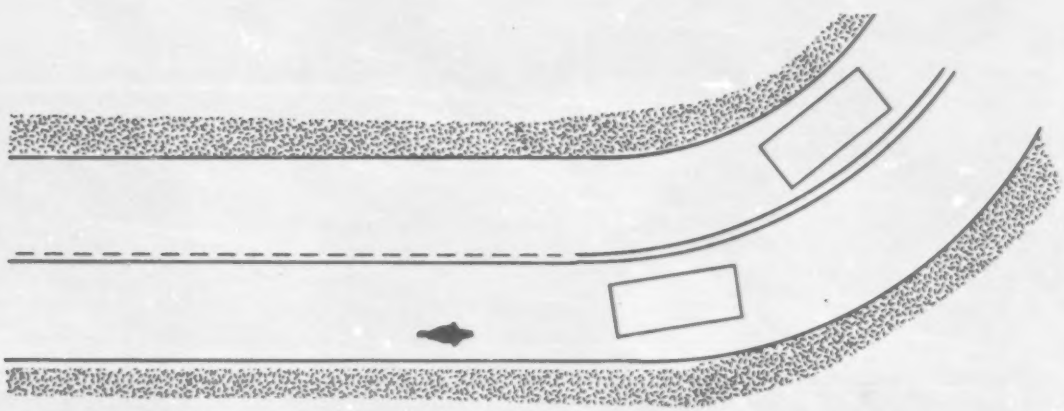
RESOURCE SHEET 7

Defensive Driving Techniques

- Use the SIPDE process to minimize and separate hazards and to give yourself opportunity to compromise in hazardous situations.
- Use the three-second rule.
- Make yourself as visible as possible.
  - Use reflective fabrics or tape on helmet, clothing, and motorcycle.
  - Drive as if you were invisible, leaving yourself plenty of room to escape hazards. (Don't depend on the other drivers to see you.)
  - Signal turns well in advance, several seconds before acting.
  - Stay out of the blind spots of other vehicles.
  - At intersections, drive as if you were invisible, always giving the other driver plenty of room and leaving yourself an escape from any critical situation.
- Stay to the right of the center of the lane (near the right tire track) when driving in the passing lane.



- Move to the right of the center of the lane (near the right tire track) to avoid oncoming vehicles that might cross the center line on a curve on a two-lane, two-way highway.



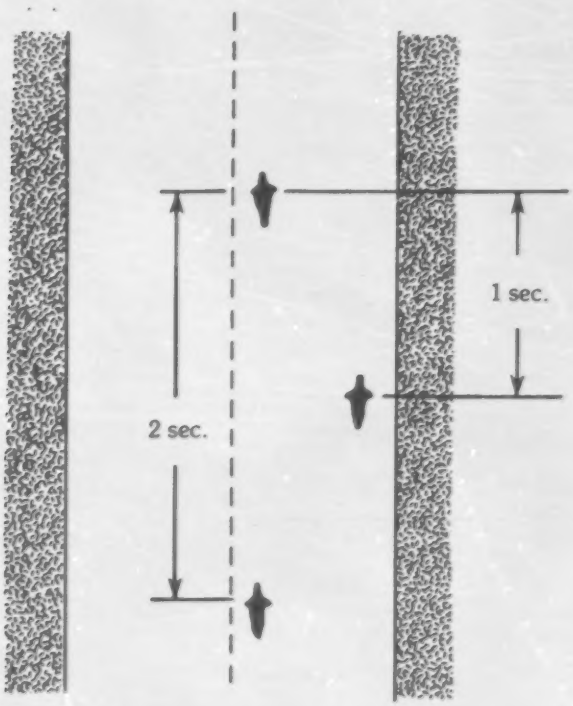
- Establish eye contact and pay attention to communications of other drivers.
- Do your utmost to communicate to other drivers where you are and when you intend to change your position.
- If another motorist signals an intention to change speed or position, give the motorist room and opportunity to act. Don't challenge the vehicle—you are smaller and more vulnerable.

Group Formation

a. Do not ride side-by-side. Riding abreast of another vehicle limits the ability of both riders to make lateral position changes and evasive maneuvers.

b. Do use a staggered formation:

- First rider is to the left of the center of the lane (near the left tire track).
- Second rider is to the right of the center of the lane (near the right tire track), about one second back.
- Third rider is to the left, two to three seconds behind the first rider.
- Fourth rider is to the right, two to three seconds behind the second rider.



c. Use single file

- around sharp curves
- making turns at intersections
- in off-street areas
- on narrow roadways
- on exit and access ramps

RESOURCE SHEET 8

Group Riding

General Rules

- Ride in small groups, no more than four or five together.
  Note: A very large group disrupts traffic and can get separated too easily.
- Ride in staggered formation, as described on page 65.
- Do not bunch up. When at a stop signal, wait in pairs, so as not to create a conflict with other traffic.
- Complete lane changes and other maneuvers independently, resuming the group formation as the maneuver is completed by each member.
- Select a leader usually the most experienced rider in the group. The leader has the following responsibilities.
  a. Do not exceed the maximum speed of the least experienced rider.
  b. Maintain a larger following distance from the vehicle ahead than if riding alone.
  c. Scan the roadway ahead to anticipate any situation requiring action.
  d. Be sure that there is adequate time for all riders to complete leader-initiated actions. Followers should not have to hurry to avoid being left behind.
  e. Give signals early enough so that all riders know what is happening.
     Note: In addition to the standard turn signals discussed in Lesson 4, the following signals are useful for group riding.
     - Fist up, pumping up and down, means increase speed.
     - Hand down, flat, and pumping up and down, means decrease speed.
     - Pointing at road surface means look for hazards.
     - Hand down and brought back edgewise to the rear means assume single file.
     - Pointing at engine with finger means malfunction.
  f. Keep an eye on the following riders to detect stragglers or problems, especially after turns, lane changes, traffic signals, or other points where individuals might get separated from the group.

Group Passing (two or more motorcycles)

a. Lead rider passes the vehicle, using the single cycle procedure, returns to original lane position, and continues ahead to open up a gap for the next rider.
b. Second rider moves to the left of the center of the lane (left tire track) for visibility.
c. Second rider passes the vehicle.
d. Second rider moves to the right of the center of the lane (right tire track) and moves ahead to open up a gap for the next rider.
e. The rest of the riders pass in the same manner, one at a time, returning to the staggered formation.

LESSON 6. Environmental and Road Surface Conditions

Task

Begin to develop the skills and knowledge necessary to cope with adverse environmental and road surface conditions.

Objectives

1. List four adverse environmental conditions and six adverse road surface conditions and state how each can affect the operation of a motorcycle.
2. Given descriptions of adverse environmental and road surface conditions, select the correct procedures and techniques for coping with them.
3. Given a motorcycle, demonstrate under controlled conditions the ability to handle selected weather and road surface problems simulated on a practice range.

Materials

Required:

- Motorcycles (suggested minimum: one for every two students)
- Safety apparel for every student
- Materials with which to simulate road hazards, such as boards, rocks, gravel, sand, and water
- Uneven surface, such as a curb, over which motorcycles can be ridden
- If available, nearby railroad tracks
- Range Cards 13, 14, and 15 (Appendix G)

Optional:

- Films or filmstrips, as listed in Activity C.1
- Projector and screen
- Experienced rider to demonstrate recovering from a skid (see Supplementary Activity C.3)

References

The following references, listed in Appendix I, may provide additional information related to this lesson: 1, 10, 12, 18, 25, 29, 30, 32.

Range Set-up

Range set-ups are described in Activities B.2 and B.3. Set-up for Activity B.4 will depend on the materials available for simulating road surface hazards.

Instruction

A. Environmental Conditions

1. Discussion

Present (or elicit from students) and discuss adverse environmental conditions, their impact on the motorcycle operator, and techniques for handling them, as outlined below.

Note that in all of these situations, it is important to remember that the operator of a two-wheeled vehicle must maintain control and balance whereas a four-wheeled vehicle operator must maintain only control.

Condition	Impact on Motorcyclist	Techniques
Rain	Rain makes the road slippery; causes hydroplaning.	• Do not ride in the rain unless it is essential. • If you must ride in the rain, ride slowly. • Watch for slickness, especially where there is oil or grease on the road (intersections, middle of the lanes).
	Being wet and cold can impair driving skill. Since riding in the rain requires more skill and caution than fair weather riding, this is especially dangerous. Excessive exposure can lead to hypothermia (subnormal body temperature), which is very serious.	• Wear the proper rain apparel. • Stop if you get too cold and wet.
Wind	Side winds threaten balance. Passing an 18-wheel truck can create such suction and side wind that the motorcyclist is moved sideways half a lane.	• Watch for gusts. • Take extra care when passing or being passed by large trucks.
	Front winds are fatiguing.	• Use a windshield or fairing to reduce fatigue and protect upper torso, especially arms and hands.
	Rear winds increase your speed.	• Watch for gusts. • Adjust acceleration as needed.

Condition	Impact on Motorcyclist	Techniques
Cold	Cold can make the motorcyclist stiff. Stiffness reduces reflexes and dexterity. Cold temperatures coupled with the speed of the motorcycle can produce a very cold chill factor.	• Wear heavy apparel. • Use a windshield or fairing. • Be aware of the chill factor and guard against stiffness. • Stop if you get too cold.
Dust and sand	Dust and sand in the air reduce ability to see and to be seen.	• Wear adequate eye protection. • Turn on lights. • Reduce speed.
Low visibility	Fog, rain, snow, dust, sand, dusk, and other environmental conditions can reduce your visibility.	• Reduce speed. • Turn lights on.
Bright sun	Bright sun can cause sun blinding.	• Wear adequate eye protection (good sunglasses). • Lower your eyes. • Reduce speed.
Ice and frost	Patches of ice or frost can upset the motorcycle very quickly.	• Never ride in icy conditions. • Be very careful if you are riding when it is cold enough for moisture on the road surface to freeze. • Reduce speed. • Watch for ice spots; they can be deadly. • Be especially cautious on bridges and overpasses, which freeze before the road surface.

B. Adverse Road Surface Conditions

1. Discussion

Present (or elicit from students) adverse road surface conditions that might be encountered and techniques for handling them, as outline on the next page. Note that some obstacles should be avoided and others can be ridden over. Note also the danger of highway hypnosis, especially on long, unbroken, monotonous stretches of highway.

Surface conditions to be avoided if possible (if they can't be avoided, watch the roadway carefully and "ride the pegs" to reduce shock and maintain control of the motorcycle):

- potholes
- road litter, including patches of dirt, sand, and gravel
- glass
- debris from highway crashes, including oil and water slicks
- wet leaves, which can be very slippery
- pedestrians and animals
- dead animals
- car doors (Keep enough distance from parked cars to be able to evade doors opening on the street side.)
- cars entering your lane from a side street

Surface conditions to be ridden through or over (by slowing down and exercising caution):

- water
- loose gravel or sand
- paint strips (these are especially dangerous when wet, especially if reflectorized)
- dips (Ride the pegs through dips.)
- ditches (Ride the pegs through ditches.)
- soft shoulders
- ruts (Cross ruts squarely.)
- shaded portions of the road (When weather is wet or cold, shaded portions are slipperier than the rest of the road)
- metal grates
- railroad tracks (Ride across tracks squarely, not at an angle.)

How to Handle Surface Conditions

1. Use the SIPDE process to locate and identify hazards. Remember that your vehicle has two wheels, not four, and react accordingly.
2. Avoid the hazard if possible. (Check traffic and signal before changing road position.)
3. If the hazard cannot be avoided, use these techniques.
    - Reduce speed.
      Note: It is important to brake and prepare before the hazard.
    - Make no quick changes of direction.
    - Keep feet and body ready to adjust balance or ride the pegs.
    - Shift weight to the wheel furthest from the obstacle (weight to the rear as front wheel hits the obstacle, weight forward as the rear wheel hits the obstacle).
    - Check traffic and signal if you have time.
    - Do not use the clutch or brake while in the hazard.
    - Do not accelerate until past the hazard.

4. Explanation, Demonstration, and Practice: Riding the Pegs

Explain the purpose and importance of riding the pegs: to avoid shock to the body while maintaining firm control of the motorcycle when riding over uneven surfaces, dips, ditches, or obstacles.

Using an uneven surface (such as a curb) on which you can drop to a slightly lower surface, demonstrate the technique for riding the pegs, as outlined below. Then have students practice the technique, first at a very slow speed and increasing with each practice. Use Range Card 13.

a. Firmly grip the handlebars.

b. Push up with the legs and lift the body from the saddle.

c. Stand on the pegs, knees bent and lower legs perpendicular to the pegs.

d. Keep knees, wrists, and arms loose to absorb the shock.

Note: A severe bump can cause uneven or jerky acceleration.

5. Demonstration and Practice: Fast Stops

Using Range Card 14, demonstrate and have students practice making fast stops, as outlined and diagrammed below. Speed should be controlled; stops should be abrupt, but not all-out emergency stops.

Students line up on their motorcycles and await their turns. One student at a time pulls into the practice area, moves toward the cones at a controlled speed, and completes the following steps.

At the first set of cones:

a. Close the throttle.

b. Brake using front and rear brakes simultaneously.

c. Keep the body ready to adjust balance.

d. Squeeze the clutch.

At the second set of cones:

e. Come to a complete stop.

f. Downshift into neutral.

g. Shift to first gear and move out of the practice area, returning to the back of the line.

During the entire exercise, the student should keep weight balanced over the center of the motorcycle, steer in a straight line, and avoid skidding.

6. Student Performance: Adverse Road Surface Conditions

   Simulate various road surface conditions on the range using flat boards, 2" x 4," rocks and other obstacles, water, or other available materials. If there is a quiet road nearby with railroad tracks or sheet gratings, have students practice crossing them.

   For each hazard, have students line up and await their turns in the practice area. Have one student at a time move toward the hazard at a controlled speed and negotiate the obstacle, as outlined and diagrammed below. Use Range Card 15.

   a. Reduce speed before the hazard.
   b. For obstacles, ride the pegs.
   c. Shift weight back as the front wheel hits the obstacle.
   d. Shift weight forward as rear wheel hits the obstacle.
   e. Do not use the clutch or brake or change direction while crossing the hazard.
   f. Return to the saddle and accelerate once clear of the hazard.

C. Supplementary Activities (Optional)

1. Show and discuss a film or filmstrip on identifying and handling adverse environmental or road surface conditions, such as one of the following:
   - *Behind the Handlebars, Unit IV: Special Conditions* (Honda, ODHS)
   - *Honda Safety Film Series: Natural Forces and the Motorcycle*
   - *Increasing Riding Skills* (Unit 6 Film, MSF)
   - *Motorcycle Safety and Courtesy in Traffic* (Centron, KSU)
   - *Motorcycle: Sharing the Road* (Enc. Brit., Innd. U.)
   - *Safety Rider* (Kawasaki)
   - *The Expert Rider* (Kawasaki)
   - *Unit VI Film* (Kawasaki)
2. Have students locate and report on road surface hazards in the local area.
3. Have a skilled rider demonstrate in a grassy area how to control and recover from a skid.

LESSON 7. Motorcycle Selection, Insurance, Inspection, and Maintenance

Task

Enable the students to select the best motorcycle for their needs and identify service requirements to insure economy, safety, and reliability of the vehicle.

Objectives

1. List three of the major factors to consider in selecting a motorcycle for purchase.
2. Identify the four general types of motorcycles and specify the major characteristics of each.
3. Given a motorcycle and the associated owner's manual, perform a complete preriding inspection.
4. List the motorcycle systems and components that should be included in a periodic maintenance program.
5. Identify the legal requirements regarding financial responsibility.

Materials

Required:

Student handouts made from Resource Sheets 9 and 10

Promotional literature for various types of motorcycles

Motorcycles (suggested minimum: at least one motorcycle for every two students)

Maintenance tools and materials, as needed (see Activities C.1 and C.2)

Optional:

Supplementary Activities D.1 through D.6 require some advance preparation. They should be reviewed at this time.

Resource Sheet 11

Film or filmstrip, as listed in Supplementary Activity D.4

Projector and screen

References

The following references, listed in Appendix I, may provide additional information related to this lesson: 1, 5, 7, 9, 10, 11, 12, 13, 14, 15, 16, 20, 21, 27, 38, 31, 36.

Range Set-Up

No range set-up is required for this lesson.

Instruction

A. Purchasing a Motorcycle

1. Discussion: Factors to Consider

Present and discuss the factors to consider when selecting a motorcycle for purchase, as outlined below. Resource Sheet 9 may be used as a handout. If available, distribute promotional literature on various types of motorcycles and safety equipment which lists current prices.

Cost

How much can you spend on the motorcycle and related costs? Include the costs of the following items:

- purchase of the motorcycle (compare new and used vehicles)
- insurance and maintenance
- protective clothing and equipment

Use

What kind of riding do you intend to do? Different types of motorcycles are best suited for different types of riding:

- highway or touring
- street
- off-the-road
- combination

Size

Selection of size relates closely to what your riding needs are and how much money you want to spend. Consider these factors:

- size (cubic centimeters in terms of horsepower) appropriate for intended use
- cost (size you can afford)
- experience (do not get a large, powerful machine until you have been riding for at least several months)

2. Discussion: Types of Motorcycles

Present and discuss the four major types of motorcycles and the characteristics of each as outlined on the following page. Resource Sheet 10 may be used as handout. Promotional literature on the various types of vehicles should be distributed if available.

Touring-street motorcycles

- tend to be large and heavy
- can be cumbersome in heavy traffic
- not suitable for off-the-road riding
- well-suited for touring (highway travel)
- expensive

Smaller street motorcycles

- good in traffic; excellent for short trips and city riding
- can be used for touring, but not as comfortable or reliable on long trips as the larger machines
- generally too heavy for off-the-road use

Off-the-road motorcycles
- generally very light weight
- excellent for off-the-road use
- can be used for short-haul street riding

Note: Many off-the-road motorcycles do not have lights or mirrors. These features must be added to make the vehicle legal for street use.

Combination on- or off-the-road motorcycles
- equipped for legal street use
- light enough for off-the-road use

Note: Since combination motorcycles are, in effect, a compromise between two types of vehicles, they are not as well-suited either for on-street or for off-the-road use as are vehicles designed specifically for use in these settings.

3. Discussion: Financial Responsibility

The state holds drivers and owners financially responsible for any judgments for damages resulting from an accident. (See Sections 4509.12, 4509.15, and 4509.17 through 4509.21 of the Ohio Revised Code.) Discuss the legal provisions for financial responsibility, as outlined below, in relation to the cost of owning a motorcycle.

a. Seven years suspension

The law (Section 4509.40) states that for nonpayment of a judgment, the state will revoke the operator's license and vehicle registration for seven years or until the operator can prove financial responsibility.

b. Insurance

For most people, insurance is the only way that they can meet the requirements for financial responsibility. However, various bonds, securities, and certificates in the proper amounts may be used. (See Section 4509.45.)

c. Insurance coverage

Many automobile insurance policies do not cover motorcycles. Therefore, it is usually necessary to take out a special policy for a motorcycle. Passenger insurance is often optional as well. Basic insurance provisions include:

- Liability
  Minimum liability must be for the amounts of $12,500 for bodily injury to two or more persons, and $7,500 for property damage. (See Section 4509.20.)
- Collision
- Comprehensive
- Uninsured motorists
- Medical payment insurance

4. Cost Sheet

Supplementary Activity D.1 may be used at this point in the lesson if desired.

B. Preriding Inspection

1. Demonstration

Discuss the importance of inspecting the motorcycle before every ride and, using one of the training motorcycles as an example, demonstrate and explain how to perform a preriding inspection as outlined below. Distribute owner's manuals for the training vehicles to the students and have them look up specific procedures for the particular models as each item is discussed.

Parts	Inspect for:
Tires	• proper inflation • tread condition • damage Note: Tires are extremely important; a motorcycle has only two, and both are required for balance.
Spokes	• tightness of all spokes
Nuts and Bolts	• tightness of nuts and bolts, especially axle nuts
Brakes	• brakes locking the wheels properly
Clutch and Throttle	• smoothly working controls
Lights	• proper working condition of turn signals, headlamp, taillights, and brake lights
Battery	• proper fluid level
Horn	• sound
Chain	• tension • lubrication Note: Proper chain maintenance of the chain is critical.
Mirrors	• cleanliness • adjustment
Gas and Oil	• proper levels • absence of leaks Note: Low engine oil is dangerous, especially for air-cooled engines. Leaks can indicate serious problems.

2. Student Practice

Have students conduct preriding inspections on the training motorcycles according to the steps outlined above and the owner's manuals for the specific models. This activity can be conducted either simultaneously with Activity B.1 or separately.

C. Periodic Maintenance

1. Demonstration

Explain and, as far as possible, demonstrate common maintenance procedures as outlined below, using one of the training motorcycles as an example. Include the following points in the explanation:

a. Periodically, a preriding inspection will reveal that certain items need attention, most commonly the chain and the various controls.

b. Always consult the owner's manual for the manufacturer's recommendations.

c. Generally, off-the-road bikes will require more frequent maintenance than road vehicles.

Parts	Maintenance
Chain	• Adjustment The chain should be adjusted according to the owner's manual. Typically, this might be 3/4 inch of slack when the motorcycle is on the center stand. • Lubrication This is one of the most critical and yet most neglected parts of motorcycle maintenance. Off-the-road vehicles should have their chains cleaned, lubricated, and adjusted after every ride. For road motorcycles, it is recommended that the chain be lubricated and adjusted after every long-distance ride, or at least once a week. When touring, it is good practice to lubricate and adjust the chain at every refueling stop.
Controls (brakes, clutch, throttle)	On-the-road vehicles, these controls should be lubricated and adjusted two to four times a year, especially at the beginning and at the end of the riding season. Off-the-road motorcycles should be serviced more frequently.
Oil	Consult the owner's manual. Typically, four-stroke engines should have the oil replaced every 1,500 to 3,000 miles. Two-stroke engines should have the oil replaced every 4,000 miles. If fewer miles are traveled, the oil should be changed at least once a year.
Tune-Up (spark plugs, points, valves, air cleaner)	Consult the owner's manual. Typically, a tune-up should be done every 1,000 to 5,000 miles depending on type of use, time elapsed, and weather conditions. It is good practice to give the valves, spark plugs, and timing components a thorough check every month.

2. Student Practice

   Since some maintenance will probably be required on training motorcycles before their return or storage, this is a good opportunity for the students to perform at least the simpler maintenance procedures.

   Have students perform selected maintenance steps, as outlined in Activity C.1 or separately under close supervision.

D. Supplementary Activities

1. Using Resource Sheet 11 or a cost sheet of your own making, work with students to complete sample cost sheets for different kinds of motorcycles at current prices. (This activity will require preparation before the lesson to acquire current price information. This may be accomplished either by calling several dealerships and insurance companies or by assigning students to obtain price information for specific types or models of vehicle.)
2. Have a law enforcement officer make a presentation on the various laws applicable to motorcycles.
3. Discuss the differences among the various states' motorcycle laws, especially those of neighboring states.
4. Show a film or filmstrip on motorcycle maintenance, such as one of the following:
   - *Motorcycle Safety Tips* (Pyramid, U. of Ill.)
   - *Motorcycle: Sharing the Road* (Enc. Brit., Ind. U.)
   - *Reaching Out* (Honda)
   - *Selection, Insurance, and Maintenance* (Unit 7 Filmstrip, MSF)
5. Invite a chief of maintenance from a motorcycle shop to make a presentation on maintaining a motorcycle.
6. Visit motorcycle dealerships with the students to help them become acquainted with various sizes, types, and makes of motorcycles.

   Note: Each dealership should be notified before making a class visit. This is a good time to "remember" the dealers who have participated in the motorcycle loan program. They are likely to appreciate the potential business of the students who become acquainted with their shops.

RESOURCE SHEET 9

Factors to Consider in Selecting a Motorcycle

Cost

How much can you spend on the motorcycle and related costs? Include the cost of the following items:

- purchase of the motorcycle (compare new and used vehicles)
- insurance and maintenance
- protective clothing and equipment

Use

What kind of riding do you intend to do? Different types of motorcycles are best suited for different types of riding:

- highway or touring
- street
- off-the-road
- combination

Size

Selection of size relates closely to what your riding needs are and how much money you want to spend. Consider these factors:

- size (cubic centimeters in terms of horsepower) appropriate for intended use
- cost (size you can afford)
- experience (do not get a large, powerful machine until you have been riding for at least several months)

RESOURCE SHEET 10

Types of Motorcycles and Their Characteristics

Touring-street motorcycles

- tend to be large and heavy
- can be cumbersome in heavy traffic
- not suitable for off-the-road riding
- well-suited for touring (highway travel)
- expensive

Smaller street motorcycles

- good in traffic; excellent for short trips and city riding
- can be used for touring, but are not as comfortable or reliable on long trips as the larger machines
- generally too heavy for off-the-road use

Off-the-road motorcycles

- generally very light weight
- excellent for off-the-road use
- can be used for short-haul street riding

  Note: Many off-the-road motorcycles do not have lights or mirrors. These features must be added to make the vehicle legal for street use.

Combination on- and off-the-road motorcycles

- equipped for legal street use
- light enough for off-the-road use

  Note: Since combination motorcycles are, in effect, a compromise between two types of vehicles, they are not as well-suited either for on-street or for off-the-road use as are vehicles designed specifically for use in these settings.

RESOURCE SHEET 11

Sample Cost Sheet

Directions: In each block, insert a cost range representing current costs for different makes or companies

	Touring-Street	Smaller Street	Off-the-Road	Combination
1. Purchase Price (new)*				
2. Insurance, per year (include liability, collision, comprehensive, uninsured motorist, and medical payment). Figure at students' average age, minimum coverage.				
3. Maintenance and operation per year: • gas				
• oil				
• tune-ups				
• spare parts				
4. Protective clothing and equipment: • helmet				
• eye protection				
• other items				
5. License				
Total, first year				

(for subsequent years, add only items 2, 3, and 5).

* Figure also for used vehicles if information is available.

LESSON 8. Evaluation

Task

Evaluate students' achievement of performance objectives in Lessons 1 through 7.

Objectives

Demonstrate acquisition of knowledge and attitudes related to safe motorcycle operation by means of a written test. Demonstrate skills in safe motorcycle operation by satisfactorily performing selected maneuvers.

Materials

The evaluation materials provided for this course cover all the performance objectives identified in Lessons 1 through 7. The materials have been organized into two categories: (1) a written test and (2) a performance exercise. These categories are explained in the lesson. The following materials are required for each.

Written Test

Knowledge test items, Forms A and B (Resource Sheet 12)
Attitude test items (Resource Sheet 13)

Performance Exercise

Range Area: The Performance Exercise was designed for use on a paved, level off-street area such as a driving range or vacant parking lot. The size and related physical requirements are the same as those of the basic range set-up used for the course.

Lines: Lines made of chalk or tape to denote exercise areas, particularly in critical areas such as curves and serpentine.

Traffic Cones: Sixty cones for use at critical points and for barriers (fewer cones are required when combined with lines).

Measure: A tape or marked rope for laying out the range and placing cones.

Range Card #17: A small version of Figure 1.

Rating Sheets: One per student. (See Resource Sheet 14).

Motorcycle(s): One or more motorcycles, 125cc or smaller.

Safety Equipment: Helmet and protective clothing for each student.

References

No references are provided for this lesson.

Range Set-Up

The range set-up for the performance exercise is described in Activity B.1.

Instruction

A. Written Test

The written test is divided into two parts, knowledge test items and attitude items, described below.

Knowledge Test Items

The knowledge test items (Resource Sheet 12) are presented as two parallel tests, Form A and Form B. Each contains 11 true-false and 29 multiple choice questions. The tests may be used in several ways: as pre-posttests; as a means of diversifying the examinations within or between classes; or in whatever other way is most useful for the individual teacher.

Attitude Items

The attitude items (Resource Sheet 13) are statements about problems and issues related to the safe driving of motorcycles. There are no correct answers for these statements; rather, students indicate the extent to which they agree or disagree with the ideas expressed. The attitude test is not to be used in student evaluation. Rather, its value is to monitor instruction designed primarily to develop competence and knowledge; that is, to assess instruction. The test may be used as a pre or posttest to determine the extent of change in attitude as a result of the course. It may also be used during the course to generate class discussion and possible follow-up research on items for which there is a divergence of opinion. Finally, very profitable class discussion can be generated based on the questions in the attitude test. This discussion is both for information and clarification. The role of the teacher is one of facilitator and moderator.

Administer the written test to the students in the manner that best meets the needs of the local program. (Note: It is necessary that the written test precede the performance exercise.)

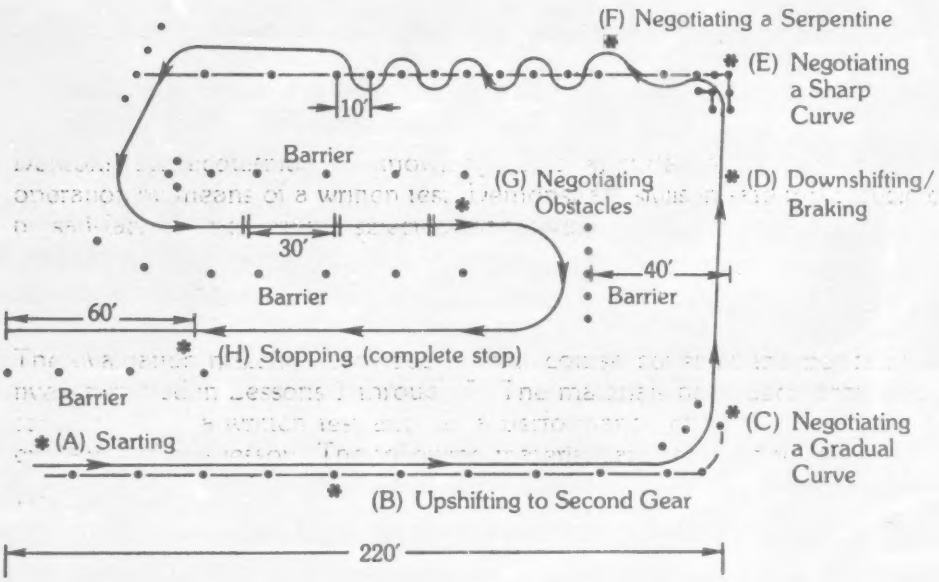
B. Performance Exercise

1. Preparation

The purpose of this Performance Exercise is to assess the proficiency of novice riders in the basic skills and behaviors practiced during the range phase of the course. In all, it involves eight skills and behaviors, which are to be sequentially executed using a single range layout: (1) starting, (2) upshifting to second gear, (3) negotiating a gradual curve, (4) downshifting and braking, (5) negotiating a sharp curve, (6) negotiating a serpentine, (7) negotiating obstacles, and (8) stopping.

Set-up the range for the Performance Exercise as shown below.

Range Layout for the PERFORMANCE EXERCISE



*Suggested positions for raters/observers.

The heavy black dots indicate placement of cones. The asterisks represent the locations where the raters are to stand when observing the skills and behaviors. The dimensions of each part of the range layout should match those in the diagram.

2. Familiarization

Become thoroughly familiar with the exercise and associated range layout in the following manner before using it to test any students:

a. Walk around the range layout to become acquainted with each of the locations where specific skills and behaviors are to be observed and rated.

b. Carry an actual Rating Sheet and carefully read the observation criteria related to each location. The Rating Sheet and instruction for its use are presented as Resource Sheet 14.

c. Complete the exercise on a motorcycle.

On some occasions it may be useful and efficient to have the students in the course rate each other's performance on the test exercise. If this approach is used, help each student to become thoroughly acquainted with the range layout, Rating Sheet, and observation criteria, in the following manner:

a. Walk each student around the range several times, pointing out each observation point where a specific skill behavior is to be observed.

b. Have a Rating Sheet available at that time and explain the observation criteria to be used at each location.

c. Give an on-cycle demonstration of the entire exercise.

d. Ask students to rate your performance during the demonstration.

e. Discuss the ratings thoroughly after the demonstration.

f. Admonish the students very carefully about allowing any sexism or other bias to enter into their ratings. In any event, the instructor is ultimately responsible for the fairness of the evaluation. Have several observers average the scores.

3. Administration of the Exercise

Use the following steps to familiarize the students with the exercise about to be performed and to conduct the exercise. Each student who completes the exercise should undergo the same familiarization and performance sequence. This consistency will help to ensure the fairness of the performance ratings.

a. For each student to be rated, place a motorcycle at the starting point.

b. Walk the student around the range and describe the skills and behaviors to be rated at each location on the range. Give the student a sample rating form and explain the specific instructions for acquainting the student with the range layout that can be found on Range Card 13.

c. Have the student perform all eight skills in sequence as described on Range Card 17. Observe and rate the performance as described above.

d. Repeat the familiarization and performance sequence for each student to be rated.

4. Interpretation of the Ratings

Use the following steps to interpret the ratings:

a. Translate the ratings into their numeric equivalents using the following equivalents:

5 = Excellent 2 = Average
4 = Very Good 1 = Poor
3 = Good

If a rating for a particular observation is inadvertently left blank, enter a 2 for that criterion.

b. Add the total ratings for each skill. The maximum and minimum values that can be expected for the various skills and behaviors are shown below.

Range of Rating Values for The Skills Performed

SKILL	NUMBER OF OBSERVATION CRITERIA	VALUES OF SUMS: Minimum	Maximum
(A) Starting	5	5	25
(B) Upshifting to Second Gear	4	4	20
(C) Negotiating a Gradual Curve	3	3	15
(D) Downshifting/Braking	5	5	25
(E) Negotiating a Sharp Curve	3	3	15
(F) Negotiating a Serpentine	5	5	25
(G) Negotiating Obstacles	4	4	20
(H) Stopping	5	5	25

c. Compute the average rating for each skill by dividing the sums generated in Step 2 by the number of observation criteria for that skill (see above). Round each average to the nearest tenth and write it in the oval area on the Rating Sheet.

d. Assign a "Pass" or "Fail" rating for each skill and circle the rating in the oval area. An average rating of 3.5 or greater is considered passing; lower is considered failing.

C. Assign a "Pass" or "Fail" rating for the total Performance Exercise. A passing rating on seven or more of the skills is considered as passing the total Performance Exercise; fewer passing ratings on the skills is considered failing. Students who fail the overall exercise should be assigned additional practice on the range and required to repeat the entire Performance Exercise.

Note: The pass-fail standards were established to reflect levels of performance deemed necessary for students in the course to be able to operate their motorcycles safely. Instructors may wish to develop their own standards based upon results obtained from their students.

RESOURCE SHEET 12

Knowledge Test Items

Form A

Part I: TRUE/FALSE

Listed below are 11 true/false items. Answer them by circling "T" for true or "F" for false, whichever you feel is the correct answer.

T F 1. On good road surfaces, a motorcycle can be maneuvered more easily than an automobile.

T F 2. A motorcycle can be stopped more quickly than an automobile.

T F 3. Operating a motorcycle is more hazardous than driving a car.

T F 4. Inexperience and lack of skill are more important factors in motorcycle accidents than in nonmotorcycle accidents.

T F 5. The distinct visibility of motorcycles is a built-in safety feature enabling cyclists to assume that all motorists will see them.

T F 6. The correct way to mount a motorcycle is from the left side.

T F 7. It is good strategy to brake in the middle of a turn.

T F 8. The SIPDE method can be used when riding a motorcycle as well as when driving an automobile.

T F 9. Ohio law requires that motorcycles used on the street have at least one functional rear view mirror.

T F 10. One of the items to check routinely during a pre-ride inspection of a motorcycle is the battery.

T F 11. Once a chain is adjusted, there is no need to check it again.

Part II: MULTIPLE CHOICE

Items 1 through 29 are of the multiple choice type. Select the answer you think is best and circle the letter in front of the answer you have chosen.

1. When talking about traffic mix, which of the following would be considered? a). automobiles b.) bicycles c.) pedistrians d.) all of the above
2. How does the death rate (based on miles traveled) for motorcycles compare with that for automobiles? a.) approximately the same b.) eight times as great c.) much, much lower d.) four times greater
3. When riding in traffic, cyclists should ride as if they were a.) invisible b.) difficult to see c.) very easy to see d.) visible
4. With which part of the body is the front brake on a motorcycle usually operated? a.) right foot b.) right hand c.) left food d.) left hand
5. Because balance and control may be affected, what should a novice motorcyclist avoid? a.) sharp curves b.) standing on the pegs c.) carrying passengers d.) closing the fork lock

6. The best reason for a motorcyclist to use lightweight gloves when riding in the summer is: a.) to reduce the vibrations felt through the handlebar grips b.) to absorb moisture from the hands c.) to protect the hands from exposure d.) to improve the grip
7. What is the best type of eye protection to use when riding a motorcycle? a.) eyeglasses b.) windshield c.) face shield d.) goggles
8. FINE-C includes checking which of the following? a.) engine and ignition oil b.) fuel and choke c.) coil and fuel pump d.) chain and engine
9. If the motorcycle engine does not start, what should the rider check? a.) neutral gear position b.) the gas valve c.) the kill switch d.) all of the above
10. The point at which the motorcycle starts to move is called a.) first gear point b.) the friction point c.) lunger gear point d.) the clutch point
11. If braking while in a turn is necessary, how should it be done? a.) front brake lightly b.) rear brake lightly c.) rear brake first, then front brake, both lightly d.) front brake first, then rear brake, both lightly
12. Shifting requires coordination of which of the following? a.) gearshift lever, throttle, and choke b.) throttle, clutch, and gearshift lever c.) eyes, hands, and clutch d.) hands, throttle, and brake pedal
13. When two motorcycles are traveling together, how should they be positioned on the roadway? a.) single file b.) side-by-side c.) one on the right and behind the other d.) all three techniques are equally good
14. When should group riders use single file formation? a.) on interstate or express roadways, b.) where visibility is poor, c.) when riding through intersections, d.) around sharp curves
15. When riding on a dry street and under normal conditions, what following distance should a cyclist maintain? a.) one to two seconds b.) three to four seconds c.) five to six seconds d.) ten seconds
16. What is the proper position for a motorcycle in the lane? a.) in the middle of the lane b.) in the left tire track c.) in the right tire track d.) beside the center pavement marking
17. What is the reason for standing on the pegs when riding on rough surfaces? a.) it is fun b.) it gives better control c.) it helps the rider see well ahead d.) it helps the rider avoid other potential hazards
18. In Ohio, which of the following equipment are all motorcycle operators required to wear? a.) an approved helmet b.) approved boots and gloves c.) approved eye protection devices d.) both a and b
19. Which of the following groups of traffic laws is different for motorcycles than for automobiles? a.) speed regulations b.) right-of-way rules c.) licensing regulations d.) violation fines and penalties
20. Which of the following factors should a person consider when choosing a motorcycle? a.) the use the purchaser intends to make of it b.) how much the purchaser can afford to spend on it c.) riding experience d.) all of the above

21. Which type of motorcycle can be most difficult to maneuver in heavy traffic? a.) combination on- or off-road b.) off-road c.) touring-street d.) racing

22. Which of the following factors can contribute to the motorcyclist's vulnerability in regard to accidents? a.) weight of the motorcycle b.) stability of the motorcycle c.) visibility of the motorcycle d.) all of the above

23. How does cold weather make motorcycling more dangerous? a.) cold air can crack the cylinder block b.) shock absorbers do not work at temperatures below freezing c.) circulation and reaction time may be affected if inadequate clothing is worn by the rider d.) gloves and boots become stiff, thus affecting the rider's ability to control speed

24. What is the age requirement for obtaining a motorcycle license in Ohio? a.) over 18 years of age b.) at least 16 years of age c.) no less than 14 years of age d.) no older than 60 years of age

25. When stopping a motorcycle, which of the following is the correct sequence of actions? a.) apply the brakes, close the throttle, squeeze the clutch b.) close the throttle, kick the pegs, squeeze the clutch c.) release the fairings, kick the pegs, apply the brakes d.) close the throttle, release the fairings, shift to neutral

26. When is a windshield or fairing useful when riding? a.) against frontal winds b.) in cold weather c.) in rain d.) all of the above

27. Which road condition requires extra caution on the part of a motorcyclist? a.) wet oil b.) wet pavement markings c.) gravel d.) all of the above

28. What is the purpose of traffic laws and regulations? a.) to secure income for road repairs from those found guilty of breaking these rules and regulations b.) to insure a safe and well-ordered system on the roadways c.) to give priority and right-of-way to two-wheeled vehicles d.) to guarantee that the system does not fail

29. One of the items on a motorcycle that requires constant attention is the: a.) taillight b.) headlight c.) chain d.) rear brake

ANSWERS: (1) T (2) T (3) T (4) T (5) F (6) T (7) F (8) T (9) T (10) T (11) F; (1) D (2) D (3) A (4) B (5) C (6) C (7) C (8) B (9) D (10) B (11) B (12) B (13) C (14) D (15) B (16) B (17) B (18) C (19) C (20) D (21) C (22) D (23) C (24) B (25) A (26) D (27) D (28) B (29) C.

Knowledge Test Items

Form B

Part I: TRUE/FALSE

Listed below are eleven true/false items. Answer them by circling either "T" for true or "F" for false, whichever represents what you feel is the correct answer.

T F 1. Motorcycles have greater maneuverability than automobiles on all types of surfaces.

T F 2. The point at which you should shift gears is called the friction point.

T F 3. More skill is required in riding a motorcycle than in driving a car.

T F 4. Factors which make the motorcyclist more vulnerable to accidents and injuries than occupants of other vehicles include vehicle weight, exposure, and forced space usage.

T F 5. Motorcycles are seen more easily than automobiles because of their distinct shape.

T F 6. The engine on a motorcycle can be shut off only by using the ignition switch.

T F 7. The engine of the motorcycle can be used to decrease speed.

T F 8. You should keep a minimum of three seconds between your vehicle and those ahead.

T F 9. In Ohio, a motorcycle may be operated on the public roadways if one has a driver/automobile license.

T F 10. A rider does not need to inspect his or her motorcycle before every trip, especially if riding every day or so.

T F 11. The greatest percentage of motorcycle accidents occur at intersections.

Part II: MULTIPLE CHOICE

Items 1 through 29 are of the multiple choice type. Select the answer you think is best and circle the letter in front of the answer you have chosen.

1. What is the term for the wide variety of vehicles and pedestrians which share the highways? a.) fairing b.) traffic mix c.) transportation system d.) mass transit

2. Which of the following is the cause of most collisions between automobiles and motorcycles? a.) weather conditions b.) drivers unfamiliar with the roadway c.) automobile driver not seeing the motorcycle d.) vehicle failure

3. Which term refers to the actions taken by cyclists so as NOT to put themselves into positions where their safety depends on being seen by other highway users? a.) ENDURO b.) invisible rider c.) shrouding d.) visual scanning

4. With which part of the body is the clutch on a motorcycle usually operated? a.) right foot b.) right hand c.) left foot d.) left hand

5. If a passenger on a motorcycle moves unexpectedly, which of the following is most affected? a.) weight b.) velocity c.) stability d.) visibility
6. What is the best type of foot wear to wear when riding a motorcycle? a.) lace-up boots b.) over-the-ankle shoes c.) shoes with tough soles d.) high tennis shoes
7. What qualities should a motorcycle helmet have? a.) conformance with state and federal standards b.) proper and comfortable fit c.) high visibility d.) all of the above
8. Which of the following should you do before starting the engine of a motorcycle? a.) put your feet on the pegs b.) apply the rear brake c.) be sure the engine is in neutral d.) release the brake
9. When parking a motorcycle on a hill or incline, what should be done? a.) place a stone (or other barrier) in back of the rear wheel b.) place a stone (or other barrier) in back of the front wheel c.) place motorcycle in first gear d.) place motorcycle in reverse gear
10. What should you do when the friction point is reached? a.) push the brake lever harder b.) shift to second gear c.) continue to release the clutch d.) fold in the kickstart lever
11. What should you do when making a sharp, slow-speed turn? a.) lean the cycle more than your body b.) lean more than the cycle and turn the handlebars c.) lean with the cycle and turn the handlebars d.) lean away from the turn to maintain balance
12. After downshifting and while releasing the clutch lever, how much throttle is needed? a.) slight increase b.) slight decrease c.) none d.) no change
13. When should you downshift? a.) going up and down hills b.) before or after a turn c.) when the engine is lugging d.) in any of the above situations
14. When riding in a group of four, what is the safest formation? a.) single file b.) two abreast c.) staggered d.) four abreast
15. Before changing lanes, how should a cyclist check traffic? a.) using the mirrors b.) turning the head c.) turning the head and using the mirrors d.) moving to the right side of the lane and turning the head
16. To keep the correct distance behind another vehicle, which following distance should a cyclist use? a.) 50 to 75 feet b.) three seconds c.) one car length d.) one-half minute
17. When going around a curve on a two-lane, two-way highway, which of the following is the better action for a motorcyclist to use? a.) stay in the left tire track b.) move to the right tire track c.) move to the middle of the tire track d.) slow down when reaching the sharpest part of the curve
18. What is the best technique for a motorcyclist to use when crossing railroad tracks? a.) cross as nearly as possible at right angles b.) cross at any angle c.) cross without losing speed d.) cross while going no more than 10 mph
19. What is the legal height for motorcycle handlebars? a.) 36 inches above the seat b.) even with the seat c.) no higher than 15 inches above the seat d.) 12 inches lower than the top of the windshield
20. In Ohio, what motorcycle riders are required to wear helmets? a.) none b.) all riders c.) riders under 16 years of age d.) riders under 18 years of age

21. Which of the following is a key factor to consider when purchasing a motorcycle? a.) cost b.) size c.) intended use d.) all of the above
22. Which type of motorcycle is generally best for city riding? a.) touring-street b.) smaller-street c.) combination on- or off-the-road d.) all three are equally good
23. During normal riding, what should you do as soon as you feel the clutch taking hold? a.) accelerate gently b.) shift to second gear c.) release the clutch quickly d.) put your feet on the pegs
24. If you encounter two hazards at once when motorcycling, how can you best deal with them? a.) separate the hazards b.) minimize the hazards c.) compromise the hazards d.) combine the hazards
25. Why do motorcyclists need to obey laws and regulations? a.) efficiency b.) responsibility c.) safety d.) all of the above
26. Which of the following is NOT an advantage of the motorcycle? a.) economy b.) stability c.) maneuverability d.) ease of parking
27. How many positions does the fuel supply valve have? a.) one b.) two c.) three d.) four
28. What is the most dangerous place to ride on a wet road? a.) in the center of the lane b.) near the shoulder c.) close to the center lane d.) each location is equally slippery
29. When should the oil be replaced in one's motorcycle? a.) every 1500 to 3000 miles b.) every 10,000 miles c.) once a year d.) once a month

ANSWERS: (1) F (2) F (3) T (4) T (5) F (6) F (7) T (8) T (9) T (10) F (11) T; (1) B (2) C (3) B (4) D (5) C (6) A (7) D (8) C (9) C (10) C (11) C (12) A (13) D (14) C (15) C (16) B (17) B (18) A (19) C (20) D (21) D (22) B (23) A (24) A (25) D (26) B (27) C (28) A (29) A.

RESOURCE SHEET 13

Attitude Items

Directions: Listed below are 30 statements related to driving a motorcycle. Decide how much you agree or disagree with each statement. Circle the response that best describes your reaction, as follows:

SA = Strongly Agree U = Undecided MD = Mostly Disagree
MA = Mostly Agree SD = Strongly Disagree

Below are two examples to illustrate how to mark items.

Examples:

- The best motorcycle drivers are fast drivers. (This response would indicate that you *strongly disagree* with the statement.) SA MA U MD (SD)
- If a person is thrown from a motorcycle in a bad crash, that person probably won't be hurt. (This response would indicate that you are *undecided* whether the statement is true or not.) SA MA (U) MD SD

Please work quickly but carefully.

1. The motorcycle examination should be more difficult than the motor vehicle examination to eliminate all but the best drivers. SA MA U MD SD
2. The driver of a motorcycle should be the sole judge of the mechanical fitness of his or her vehicle. SA MA U MD SD
3. Motorcyclists who pass on hills and curves should be considered incompetent. SA MA U MD SD
4. Motorcyclists who have the right of way need not be concerned about sharing the road. SA MA U MD SD
5. A motorcyclist should be permitted to drive a motorcycle only as long as he or she does not abuse the privilege. SA MA U MD SD
6. Prospective motorcyclists should take a course in motorcycle operation. SA MA U MD SD
7. Strict enforcement of traffic regulations is the only way to prevent accidents. SA MA U MD SD
8. All motorcycle drivers should be required to have their vehicles inspected once a year. SA MA U MD SD

9. Motorcyclists who disregard traffic regulations should be punished only if they cause damage or injury to others.	SA	MA	U	MD	SD
10. Most motorcyclists lack the ability to control their cycles at high speeds.	SA	MA	U	MD	SD
11. Because we can't control what happens, we should not be concerned with the prevention of accidents.	SA	MA	U	MD	SD
12. Motorcyclists who do not handle their vehicles carefully should be denied the right to drive on public roads.	SA	MA	U	MD	SD
13. The driver of a motorcycle should decide when it is safe to pass on curves.	SA	MA	U	MD	SD
14. A person should pass a physical examination before being issued a motorcycle driver license.	SA	MA	U	MD	SD
15. A tired motorcyclist should drive slowly until the drowsiness is gone.	SA	MA	U	MD	SD
16. The rudeness of traffic officers discourages courtesy on the part of many motorcyclists.	SA	MA	U	MD	SD
17. The sturdy construction of motorcycles assures safety at any speed.	SA	MA	U	MD	SD
18. The present emphasis on the enforcement of traffic rules related to motorcycle usage should be reduced.	SA	MA	U	MD	SD
19. All motorcyclists should be required to pass a driving skill test every five years.	SA	MA	U	MD	SD
20. All motorcyclists should be required to wear helmets.	SA	MA	U	MD	SD
21. The occurence of accidents is a matter of chance and should be regarded as unavoidable.	SA	MA	U	MD	SD
22. No one should be licensed to drive a motorcycle without passing a driving skill test.	SA	MA	U	MD	SD
23. Motorcyclists are the best judges of speeds at which they should be permitted to drive.	SA	MA	U	MD	SD
24. Motorcyclists convicted of driving while under the influence of liquor should have their licenses revoked.	SA	MA	U	MD	SD

25. Motorcyclists are as courteous when they are riding their cycles as they are at any other time.	SA	MA	U	MD	SD
26. Every motorcyclist should be required to pass an examination on the rules of the road.	SA	MA	U	MD	SD
27. No person should be denied the right to drive a motorcycle.	SA	MA	U	MD	SD
28. Motorcyclists should be more concerned with the welfare of their passengers than of themselves.	SA	MA	U	MD	SD
29. Driving is a cooperative affair in which motorists and motorcyclists share alike on the highways.	SA	MA	U	MD	SD
30. Statistics show that motorcyclists are not responsible for the majority of their accidents.	SA	MA	U	MD	SD

RESOURCE SHEET 14

Rating the Performance Exercise

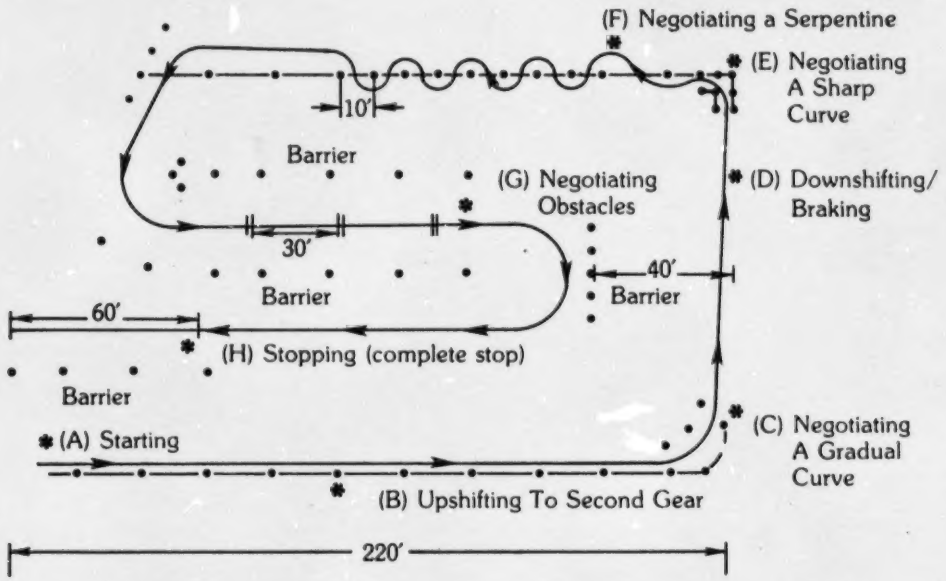
Rating Procedures

When a student is completing the exercise, performance is assessed on each of the eight skills listed on the Rating Sheet, which follows. Ratings are made according to specific observation criteria for each skill. The value chosen for each criterion is designated by a check (✓) in the appropriate box (Excellent, Very Good, Good, Average, or Poor) on the Rating Sheet.

Each time a given skill is being rated the observer should be located at the point indicated on the range layout, below. The observer's position for any given skill should be the same for every student's performance.

The Rating Sheet may be used in several ways. First, one rater can rate one student on all eight skills. Second, a rater can be stationed at each exercise, as indicated by letters (A) through (H) on the diagram below (eight raters), and rate each student performing the skills at that point. Third, three observers could be used to rate more than one exercise (e.g. observer one, exercises; (A), (B), (C); observer two, exercises; (D), (E), (F); observer three, exercises; (G), (H). Instructors will have to reproduce rating sheets depending on the number of students in the class.

Range Layout for the PERFORMANCE EXERCISE



*Suggested positions for raters/observers.

PERFORMANCE EXERCISE
RATING SHEET

Student Name _____ Date _____

Directions:

Based upon your observation of the student completing the PERFORMANCE EXERCISE, provide the following ratings. Indicate your rating on each observation criterion by placing a check ( ) in the box you feel best reflects the student's level of performance. Do not enter "Averate Ratings" at this time.

SKILL BEING OBSERVED	OBSERVATION CRITERIA	RATING SCALE: Excellent	Very Good	Good	Average	Poor
(A) Starting Out	1. Checks FINE-C (fuel supply valve on, ignition, neutral, engine kill switch on, and choke, if needed), then attempts to start engine.					
	2. Squeezes clutch and shifts to first (smoothly, without looking, without grinding gears).					
Average Rating:_____ Circle One: Pass Fail	3. Partially releases clutch and increases throttle (finds friction point automatically and accelerates smoothly).					
	4. Balances cycle and places feet on pegs.					
	5. Assumes appropriate posture (head up, not looking at controls).					
(B) Upshifting to Second Gear	1. Disengages clutch and closes throttle simultaneously/smoothly.					
	2. Correctly finds and shifts to second gear (without grinding gears).					
Average Rating:_____ Circle One: Pass Fail	3. Engages clutch and opens throttle simultaneously (shift is smooth, no revving or lugging of engine).					
	4. Maintains appropriate posture (head up, no looking at controls).					
(C) Negotiating a Gradual Curve	1. Maintains good posture (head up, adequate lean).					
	2. Assumes appropriate speed (not too fast, appropriate for curve, assumed at point of entry into curve).					
Average Rating:_____ Circle One: Pass Fail	3. Maintains good control (smoothly negotiates curve, does not knock over any cones, stays within 3 feet of side of the cones).					

BEHAVIOR BEING OBSERVED	OBSERVATION CRITERIA	RATING SCALE: Excellent	Very Good	Good	Average	Poor
(D) Downshifting/ Braking	1. Correctly uses engine braking and front/rear brakes simultaneously.					
	2. Uses both brakes and slows smoothly (no skidding or locking wheels).					
Average Rating:_____ Circle One: Pass / Fail	3. Correctly downshifts gears to first (matches shift with engine RPM's, doesn't grind gears, shift is smooth).					
	4. Does not weave or exhibit other erratic movements.					
	5. Maintains appropriate posture (head up, looking at controls).					
(E) Negotiating a Sharp Curve	1. Maintains balance (neither foot touches the riding surface, no weaving, no erratic movements).					
Average Rating:_____ Circle One: Pass / Fail	2. Maintains control (neither tire touches (cone) or crosses side limit, smooth negotiation of curve).					
	3. Maintains appropriate posture (head up, appropriate lean, no looking at controls).					
(F) Negotiating a Serpentine	1. Does not skip a space.					
	2. Neither touches a cone nor goes outside (wider than) 3 feet of the side of the cones.					
Average Rating:_____ Circle One: Pass / Fail	3. Maintains balance (neither foot touches the riding surface, no erratic movements).					
	4. Use clutch, throttle, and brake appropriately (smoothly, advantitiously).					
	5. Maintains appropriate posture (head up, no looking at controls, rhythmically leans from side to side).					

RATING SCALE:

BEHAVIOR BEING OBSERVED	OBSERVATION CRITERIA	Excellent	Very Good	Good	Average	Poor
(G) Negotiating Obstacles Average Rating:_____ Circle One: Pass / Fail	1. Approaches obstacles correctly (perpendicularly, reduces speed slowly and smoothly, no sudden braking or accelerating).					
	2. Maintains control.					
	3. Rides the pegs when negotiating obstacles.					
	4. Maintains appropriate posture (head up, no looking at controls).					
(H) Stopping Average Rating:_____ Circle One: Pass / Fail	1. Uses both brakes.					
	2. Stops without skidding or locking wheels.					
	3. Neither stalls nor races engine.					
	4. Maintains appropriate posture (head up, no looking at controls).					
	5. Maintains balance (neither foot touches the riding surface before a safe speed is reached, no erratic movements.					

APPENDIXES

Appendix A

Applicable Federal and Ohio Laws

Federal Legislation

Highway Safety Program Standard 3, Motorcycle Safety, 1971

This standard provides a definition of a motorcycle and includes the following provisions:

1. Licensing of operators as per Highway Safety Program Standard 5 (Drivers Licensing).
2. Protective headgear which shall meet standards provided by the Secretary, Department of Commerce.
3. Eye and face protection.
4. Safety Equipment which shall meet standards provided by the Secretary, Department of Commerce and as stated in the Uniform Vehicle Code.
5. Inspection as a part of each state's motor vehicle inspection program.

Federal-Aid Highway Act, 1975

The 1975 Federal Aid Highway Act, FAHA, contains legislation important to motorcycle safety. The 1975 FAHA dropped a provision that allowed the Department of Transportation to assess a 10 percent loss in total federal-aid highway funds from states that did not conform to the provisions of the Highway Safety Program Standards of 1966.

The repeal of the penalty provision has opened the door to court challenges of the constitutionally of mandatory helmet legislation. Opponents of mandatory helmet legislation have made challenges in almost all jurisdictions where such laws have been enacted. Since the enactment of the 1975 FAHA these challenges have been largely successful.

Sections of the Ohio Revised Code

Sec. 4507.13	Operator's license
Sec. 4511.01 (C)	Definition of a motorcycle
Sec. 4511.01 (X)	Definition of an operator or driver
Sec. 4511.53, 4511.55	Operation of a motorcycle
Sec. 4513	Motorcycle equipment

State of Ohio Driver Licensing Procedures

First License Applicants

Motorcycle Operator*

1. Motorcycle Only Endorsement
   a. Be 16 years of age and have met the state driver education requirement.
   b. Obtain a temporary permit application packet (same procedure as for a motor vehicle operator license).
   c. Pass a practical on-road test of riding ability.
2. Motorcycle Endorsement
   a. Possess a current valid Ohio driver or chauffeur license.
   b. Obtain a temporary permit application packet.
   c. Schedule motorcycle test (vision, written, and practical) at a driver license examination station.
   d. Present a valid Ohio driver or chauffeur license to the examiner prior to taking the practical on-road driving test.
   e. Take the examination passed form to a driver license agency and apply for a motorcycle endorsement. The issuance fee is $6.00.

Note: ALL applicants under age 18 must have a parent or legal guardian sign the license application.

*As of June 1980.

Appendix B

Motorcycle Loan Agreement

DEALER name and address

_____

_____

_____

_____

SPONSOR name and address
(school, military installation, or other organization)

_____

_____

_____

_____

DEALER AGREES:

- to provide, at no cost to the sponsor for the sponsor's exclusive use, properly equipped (to meet the State Motor Vehicle Code) motorcycles, and
- to maintain the motorcycles during the loan period at no cost to the sponsor.

For Dealer Use: Vehicle Identification

(NOTE: Rider education units may not exceed 125cc.)

Unit	Model	Identification (if available)
	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____

No. of Motorcycles

Agreement Period: From _____ to _____

SPONSOR CERTIFIES

that the motorcycles will be used exclusively for a motorcycle rider education program which meets all of the following criteria:

- is based on a curriculum or instructional guide approved by the State Department of Education, city school authorities, or military service officials (if offered on a military installation), or curriculum materials published and made available by the Motorcycle Safety Foundation*; and
- is conducted by a qualified instructor who is properly licensed to operate a motorcycle by the State.

SPONSOR AGREES FURTHER TO

- use the motorcycle exclusively for the designated educational purpose;
- permit student operation of the motorcycles only in the presence of and under the direct supervision of a qualified instructor;
- require the use of approved safety helmets by all persons on the vehicle while it is in motion or may be set in motion;
- provide necessary "owner" maintenance on a regular basis as recommended in the owner's manual and arrange to have other maintenance performed periodically at the discretion of the dealer;
- properly maintain the appearance of the motorcycle;
- provide insurance coverage for the protection of the dealer, the sponsor, the instructor(s), and the students; such insurance should include; but need not be limited to, $100,000/300,000 public liability, bodily injury, and $25,000 property damage; voluntary medical payment for operators and passengers, and physical damage to the motorcycle; and
- provide garaging to protect the vehicle from theft and environmental damage and degradation.

THIS AGREEMENT SHALL TAKE EFFECT WHEN SIGNED BY AUTHORIZED REPRESENTATIVES OF THE DEALER AND THE SPONSOR:

For the DEALER: _____ Date _____

Name and Title _____

For the SPONSOR: _____ Date _____

Name and Title _____

Instructions to Dealers (for imprinting by manufacturer)

From Policies and Guidelines for Motorcycle Education: On-Street Riders, p. 39. Copyright 1974 by the American Driver and Traffic Safety Education Association.

Appendix C

Thank You Letter to Dealer

(Sponsoring Agency's Letterhead)

Dear _____:

On behalf of _____ (Name of School or Organization), and the _____ (Number) students who completed the motorcycle safety program(s), I wish to convey a big "Thank You." Without your participation, this program would not have taken place.

Your interest in the safety of motorcyclists in the _____ (City) area is to be commended.

During the program, we have tried to follow your recommendations for taking care of the motorcycles. We hope you find them in as good a condition as we think they are.

Again, a sincere "Thank You" for your commitment to safe motorcycling.

Sincerely,

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Appendix D

Order Form for Dealer Recognition Certificates

ORDER FORM — **DEALER RECOGNITION CERTIFICATE**

Please forward _____ Dealer Recognition Certificates and frames to the Sponsoring Agency identified below.

The dealers to be recognized are as follows:

Dealership: _____
Contact: _____
Owner: _____
Address: _____
_____
Number of motorcycles loaned: _____

Dealership: _____
Contact: _____
Owner: _____
Address: _____
_____
Number of motorcycles loaned: _____

Dealership: _____
Contact: _____
Owner: _____
Address: _____
_____
Number of motorcycles loaned: _____

Dealership: _____
Contact: _____
Owner: _____
Address: _____
_____
Number of motorcycles loaned: _____

The sponsoring agency for this course is:

Agency Name _____
Contact: _____
Address: _____
_____

_____
Authorized Signature

Mail this form to:

Motorcycle Safety Foundation, Inc.
Motorcycle Loan Coordinator
6755 Elkridge Landing Road
Linthicum, Maryland 21090

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Appendix E

Program Cost-Out Sheet

Table 2-2. Worksheet for Computing *Motorcycle Rider Course* Cost

Item	Quantity	Cost	Total
A **Equipment** (One time)			
Traffic cones at ____ ea. 4 gals. paint for range at ____ per gal. Gas can at ____ ea. Fire extinguisher at ____ Tape measure at ____ First-aid kit at $ ____ Helmets at ____ ea. Eye protectors at ____ ea. Gloves at ____ pr. Vests at ____ ea. Tool kit at ____ Battery charger at ____ Spark plug cleaner at ____ Communications system *Motorcycle Rider Course* package		Total	
B **Program** (Repeat each course)			
Gasoline at ____ per gal. Oil at ____ per qt. Spark plugs at ____ ea. Textbooks at ____ ea. Spare parts		Total	
C **Salaries** (Repeat each course)			
Instructor at ____ per hour Assistant Instructor at ____ per hour (Range and Street only)		Total	
D **Insurance** (Once per year)			
Motorcycle at ____ per year		Total	

Cost per course when N courses are given in one year = $\frac{A^* + D + N(B+C)}{N}$

*After the first year, include only 15 percent of A to cover the cost of replacing lost or damaged items.

Total cost of course

\+ Number of students

= Cost per student

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Appendix F

Suggested Parental Consent Form

Dear_____:

We are pleased to have your son or daughter enrolled in the _____ High School Motorcycle Safety Education Course. This course consists of classroom and on-the-motorcycle instruction—both off the street and, later, on the street.

The motorcycles are outfitted with all the necessary safety equipment and are fully insured.

Before your son or daughter can continue in this course of instruction, the lower portion of this page must be completed and returned by a parent or legal guardian giving permission for the student to participate in the course.

Sincerely,

Instructor

(detach and return lower portion)

I hereby give permission for my son/daughter _____ to participate in the _____ High School Motorcycle Safety Education Course and I remove responsibility from the instructor or sponsoring group in case of injury to the above-named student.

Signed _____, Date _____

Signed _____, Date _____

Street Address _____

_____

City State Zip

Student's Date of Birth _____

Appendix G

Range Cards

The following range cards can be cut apart and put on a metal ring. This will provide a convenient reference system for conducting range and on-street activities. The lower portions of this page provide the front and back covers for the set of cards.

RANGE CARDS

Range Cards Directions:

1. Take Range Cards (pages 108-115) out of the guide.
2. Cut each page into thirds along lines.
3. Punch holes at the top of each card as indicated by the circles at the top of the Range Cards cover above.
4. Place all cards, in sequence, on rings, as illustrated. Thus, the cards may be taken to the range in a small and easily handled package.

RANGE CARD 1

Mounting the Motorcycle

Have students mount, position themselves, and dismount. Partners should check each other for correctness.

Mounting

- Stand on left side of cycle.
- Grip handlebars with both hands.
- Lean cycle toward body, apply front brake.
- Put right leg over seat.
- Assume standing straddle position.
- Put up kickstand.
- Balance cycle.

Good Rider Position (kickstand down)

- Head up, eyes forward.
- Comfortable back position.
- Grip hand grips with knuckles up.
- Feet on pegs, knees tight to gas tank.
- Adjust mirrors.

Dismounting

- Apply front brake.
- Put left foot on ground.
- Lean cycle toward left.
- Lift right leg over seat.
- Lean cycle on kickstand, turn front wheel to left.

NOTE: Be sure there is enough room between cycles. Check to see that student(s) applies front brake.

RANGE CARD 6

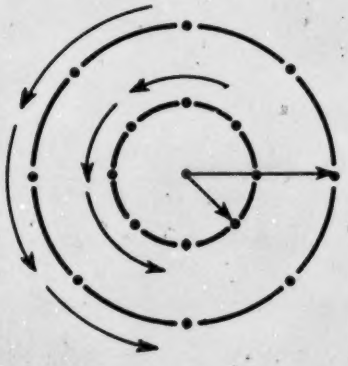
Circles

Assign six students to each 60' circle. Instruct students to do the following:

- Enter circle, moving left first.
- Keep within three feet of cones by leaning, steering, and coordinating rear brake and throttle.
- Ride circle five times, leave circle, and return to circle moving to the right.
- Observe safe following distance, keep eyes up and hands in proper position on handlebars.

If cycle stalls, ask student to move cycle to inside of circle.

109



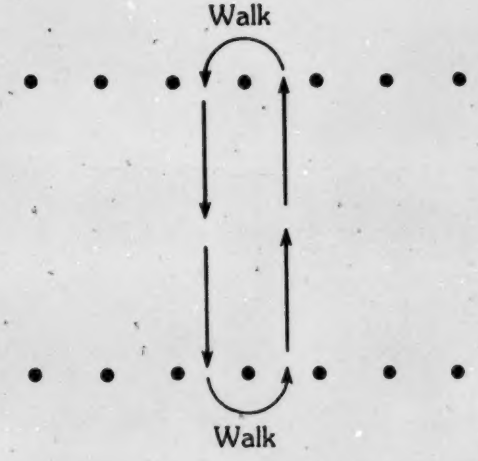
Repeat with smaller circles, using only three cycles for 30' circle.

RANGE CARD 4

Locating the Friction Point

Instruct the students to do the following:

- Mount cycle, start engine.
- Squeeze clutch, shift to first gear.
- With both feet on ground for balance, partially release clutch.
- Allow engine to pull cycle a few feet.
- Squeeze clutch, apply front brake.
- Repeat several times.
- Use entire length of straight line to target cone.

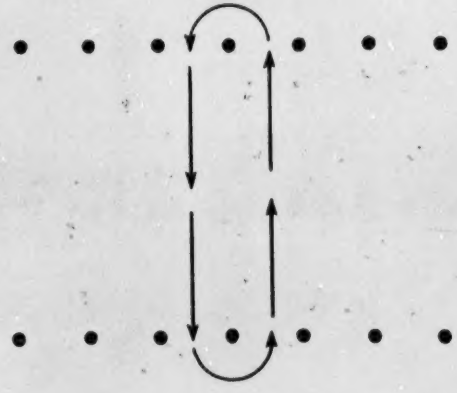


RANGE CARD 2

Walking the Motorcycle

Have student mount cycle. With engine off, ask student to straddle cycle with both feet on ground. Ask student to walk cycle to designated target. Check for following procedures:

- Mount correctly.
- Walk cycle toward target cone.
- Keep head up and eyes centered on target cone.
- Apply rear brake upon reaching the cone.
- Stop cycle and return both feet to the ground.
- Turn cycle around and repeat.

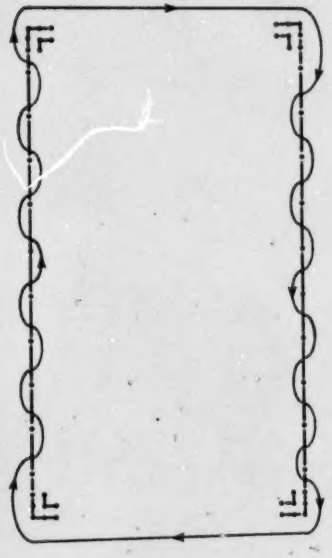


RANGE CARD 7

Weaving between Cones

Instruct students as follows:

- Weave around perimeter cones.
- Keep head and eyes up and forward.
- Ride without excessive speed changes or movement of handlebars.
- Return to beginning of course.



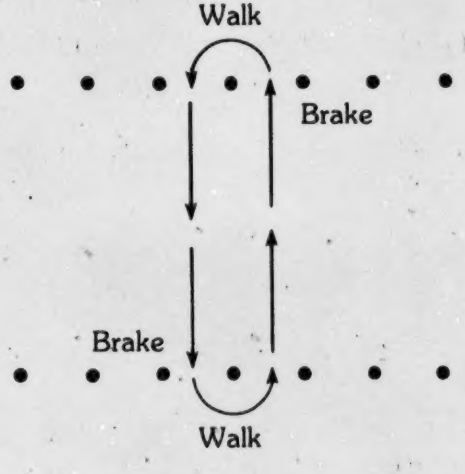
110

RANGE CARD 5

Riding the Motorcycle

Instruct the students to do the following:

- Mount cycle, start engine.
- Squeeze clutch, shift into first gear.
- Paddle walk to get cycle moving. Slowly release clutch while increasing throttle pressure.
- Put feet on pegs, steer toward target cone.
- Stop using rear brake at cone.
- Repeat several times.



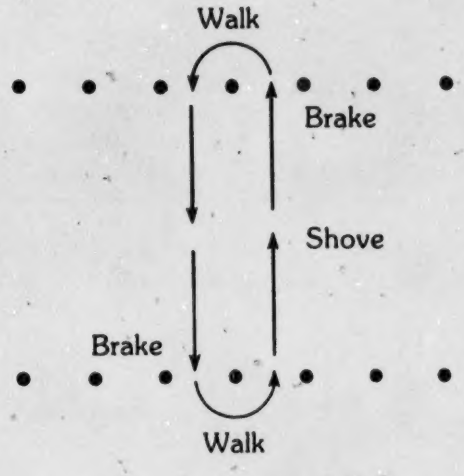
NOTE: Walk along with problem students to assist. Better students can ride around perimeter as you assist those with problems.

RANGE CARD 3

Buddy Pushing

Have students mount. With the engine off, have each partner push from the back of the seat while the rider places both feet on the front foot pegs. Check for the following procedures:

- Partner pushes the cycle toward target cone.
- The first few times, have partner push the cycle the entire distance. Later, have partner push half-way and give cycle a good shove forward.
- Rider stops at cone using rear brake and walks cycle around cone.
- Repeat. Switch partners.



RANGE CARD 12

Street Riding

Prepare:

- Explain the staggered formation.
- Explain hand signals.
- Explain procedures for split groups.
- Issue route maps and talk the students through them.

When Riding:

- Place weakest riders in middle of group.
- Keep instructor/student ratio of 1/3.
- Have students take turns leading the group.

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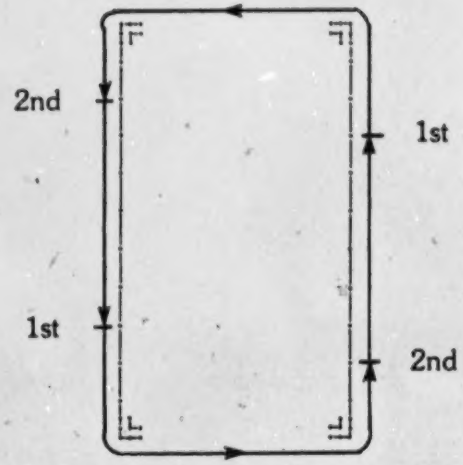
RANGE CARD 10

Upshifting and Downshifting

Use full range perimeter with students moving counterclockwise first.

Instruct students as follows:

- Shift through the gears following the suggested format.
- Maintain adequate following distance between cycles.
- Keep head and eyes up and forward.
- If engine stalls, move to inside of the course.



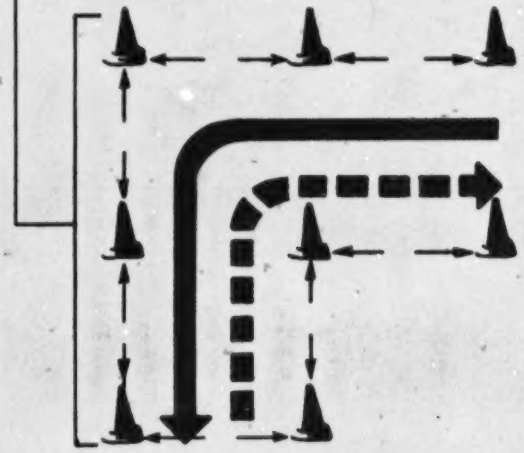
NOTE: To begin, have students use 1st and 2nd gears. As they progress, add 3rd gear.

RANGE CARD 8

Sharp Turns

Have student ride within perimeter of range, negotiating sharp turns at the corners.

Practice first in one direction, then in the other.



RANGE CARD 13

Riding the Pegs

Explain reasons for using this technique, stressing that in order to avoid shock to your body, while maintaining firm control of the cycle in critical situations, riding the pegs is an essential skill. Demonstrate.

Instruct the students to do the following:

- Keep firm grip on handlebars.
- Push up with legs and lift body from saddle.
- Keep knees loose and lower legs perpendicular to pegs.
- Keep wrists and arms loose to handle the shock.

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STRESS:

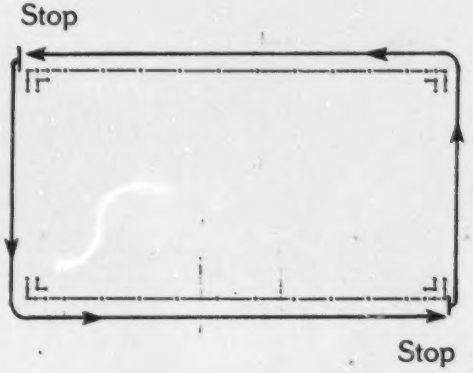
- The hands and feet are your only two areas of support when you "stand on the pegs."
- A severe bump can cause uneven or jerky acceleration.

PRACTICE: Have students drop off a higher surface onto a lower one (e.g., from sidewalk onto street). Start at slow speed and increase with each practice.

RANGE CARD 11

Combination Braking

Using the full perimeter, have students move counterclockwise and stop at diagonal corners using both brakes. Have them shift up to at least 2nd gear, downshift into 1st, and apply both brakes simultaneously at each stop.



RANGE CARD 9

Spiral (optional)

Instruct students as follows:

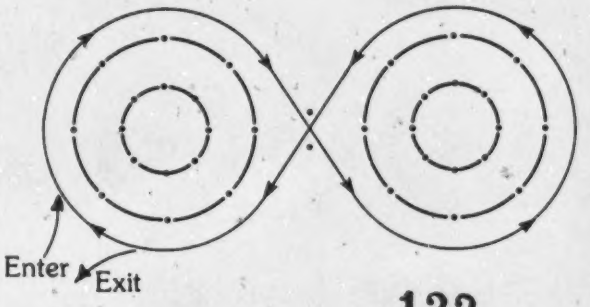
- Proceed through course from standing start.
- Keep speed steady.
- Maintain firm control.

Figure Eight (optional)

Put up to 12 students on this exercise. Stand at cross-over point to control any conflicts.

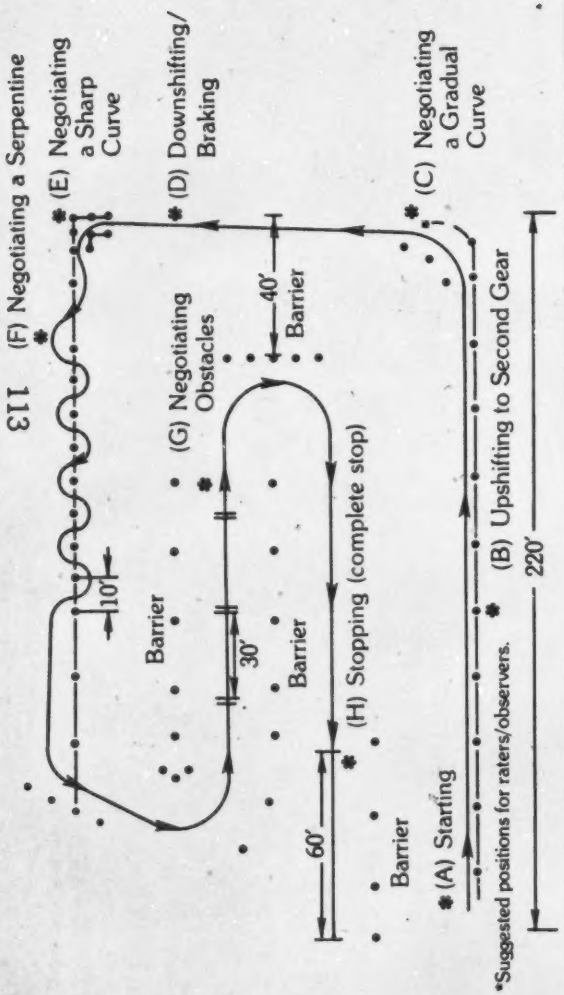
Instruct students as follows:

- Proceed through cones.
- Negotiate cross-over point without conflict.



RANGE CARD 17

Range Layout for the Performance Exercise



RANGE CARD 16A

Performance Exercise

1. Use Range Set-Up shown on back of this card and in Lesson 8.
2. Thoroughly familiarize yourself with the Performance Exercise.
3. Thoroughly familiarize students with the course layout and what is expected of them during their performance:

   A. Start engine, get cycle moving.
   B. Shift to second gear.
   C. Negotiate gradual curve.
   D. Brake and downshift to first gear.
   E. Negotiate sharp turn.
   F. Negotiate serpentine.
   G. Negotiate obstacles.
   H. Quickly stop.

   The following behaviors will be rated negatively:

   - engine stalling due to operator error
   - dropping feet to the ground for balance
   - hitting cones
   - awkwardness and/or loss of control during the operation of the motorcycle

4. Have students negotiate the course one at a time.

RANGE CARD 14

Fast Stops

Explain and demonstrate the correct procedures for a fast stop.

Have the students form a straight line with their cycles. Have one student at a time move toward the designated cones.

Instruct students to do the following:

- Balance weight over center of cycle.
- Steer in straight line.
- Keep speed controlled and not excessive.
- Move toward designated cones.
- At first cones, close throttle.
- Apply front and rear brakes simultaneously.
- Disengage clutch.
- Downshift into first when stopped.
- Shift to first and move out of practice area, returning to back of line.

RANGE CARD 16B

Performance Exercise (cont'd)

5. Rate each student rider at each position, A through H as indicated by the asterisks (*), using the Rating Sheet.

NOTE: If students are used as raters, brief the students on the use of the Rating Sheet, and have raters rotate through positions A to H.

RANGE CARD 15

Crossing Small Obstacles

Have students form a straight line with their cycles. Have one student move toward obstacles on course at controlled, smooth speeds.

Instruct the students to negotiate the obstacles using the following procedures:

- Ride the pegs.
- Shift weight back as front wheel hits obstacle.
- Shift weight forward as rear wheel hits obstacle.
- Return to saddle once clear.
- Repeat with each obstacle.

Appendix H

Sources of Films and Filmstrips

AAA — AAA Motor Club of Iowa
P.O. Box 4290
Bettendorf, IA 52808

AAMVA — American Association of Motor Vehicle Administrators
1828 L Street, N.W.
Washington, D.C. 20036

Cahill — Charles Cahill & Associates
P.O. Box 1010
Hollywood, CA 90028

Centron — Centron Educational Films
P.O. Box 687
1621 W. 9th St.
Lawrence, Kansas 66044

Film Fair — Film Fair Communications
10900 Ventura Blvd.
Studio City, CA 91604

Honda — American Honda Motor Company
100 W. Alondra Blvd.
Gardena, CA 90247

Ind. U. — Indiana University
Audio Visual Center
Bloomington, Indiana 47401
(812) 337-2103
Rental

KSU — Kent State University
Audio Visual Services
330 Library Building
Kent, Ohio 44242
Rental—Free Catalogue

MSF — Motorcycle Safety Foundation
6755 Elkridge Landing Road
Linthicum, Maryland 21090

NHTSA — U.S. Department of Transportation
National Highway Traffic Safety Administration
400 7th Street, S.W.
Washington, D.C. 20590

Visucom — Visucom Production, Inc.
P.O. Box 5472
Redwood City, CA 94063
(415) 364-5566

ODHS — Ohio Department of Highway Safety
Film Library
240 Parsons Avenue
Columbus, Ohio 43205
(614) 466-4775
Free Loan

ODE — Ohio Department of Education
Division of School Finance
Driver Education Section
65 S. Front St., Rm. 811
Columbus, Ohio 43215
(614) 466-8700

OTSEC — Ohio Traffic Safety Education Center
The National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210
(614) 486-3655
Free Loan

Pyramid — Pyramid Films Production
P.O. Box 1048
Santa Monica, CA 90406

Travelers The Travelers Insurance Company
Film Library
One Tower Square
Hartford, CT 06115
Free Loan

United Research Training — United Research Training, Inc.
Police Science Productions
5107 Hollywood Blvd.
Suite 101.
Hollywood, CA 90027

U. of Ill. University of Illinois
Visual Aids Service
1325 South Oak Street
Champaign, Illinois 61820
(217) 333-1360
Rental

Kawasaki Beginning Motorcycle Rider Course Content

UNIT ONE: Entire Course Content
Insurance Coverage for Motorcycles

UNIT TWO: Part A* —*Knowing Your Motorcycle*
Operating Controls
Where Controls Are and How To Use Them

UNIT TWO: Part B* —*Identifying Important Parts*
Where Important Parts Are and How To Use Them

UNIT TWO: Part C* —*The Pre-Ride Inspection*
Seven Things to Check
What to Check For

UNIT THREE: *Getting Ready To Go*
Protective Gear
Pre-Start Routine
Mounting and Dismounting
Parking

UNIT FOUR: *Your First Solo Ride*
Walk Your Motorcycle
Ride in First Gear: In-Balance
Stop Smoothly with Rear Brake
Balancing Your Motorcycle after Stopping

UNIT FIVE: *Turning, Shifting, and Braking*
Gradual Turning
Sharp Turning
Upshifting and Downshifting
Using Both Brakes

UNIT SIX: *Riding in Traffic*
Signaling
Control Your Motorcycle at Higher Speeds
Ride on Different Surfaces
Stand on Pegs
Carrying Passengers and Other Loads Safely

UNIT SEVEN: *Riding in Traffic (SIPDE)*
Search for Hazardous Situations
Identify Hazardous Situations
Predict Hazardous Situations
Decide What Action To Take
Execute Safe Actions

*Part A, Part B, and Part C are identified as Part 1, Part 2, and Part 3 in the films.

Appendix I

References

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2. *Highway Safety Program Manual, Volume 3, "Motorcycle Safety"* and *"Supplement,"* 1971, National Highway and Traffic Safety Administration, U.S. Department of Transportation, Washington, D.C. 20591.
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5. *Motorcycle Helmets: Claims and Facts*, 1978, NHTSA, U.S. Department of Transportation, Washington, D.C. 20590.
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7. *Motorcycle Safety, A Handbook for Automobile and Motorcycle Drivers*, 1974, Ohio Department of Highway Safety, 240 Parsons Avenue, Columbus, OH 43205.
8. *Motorcycles: Random Particles in the Traffic Stream*, 1970, by Thomas L. McDole, HIT Lab Reports, Highway Safety Research Institute, University of Michigan, Huron Parkway and Baster Road, Ann Arbor, MI 48105
9. *A Motorcycle Safety Helmet Study*, 1974, NHTSA, available from the National Technical Information Service, 5258 Port Royal Road, Springfield, VA 22151.
10. *Motorcycling and You, 56 Ideas for Two-Wheeled Safety*, 1977, A Scriptographic Booklet by Channing L. Bete Company, Inc., Greenfield, MA.
11. *Ohio's Mandatory Motorcycle Helmet Use Law: Its Effect on the Fatality Rate*, 1977, Ohio Department of Highway Safety, 240 Parsons Avenue, Columbus, OH 43205.
12. *Ohio Motorcycle Operators' Manual*, 1977, Ohio Department of Highway Safety, 240 Parsons Avenue, Columbus, OH 43205.
13. *Ohio Motor Vehicle Laws*, 1978, Ohio Department of Highway Safety, 240 Parsons Avenue, Columbus, OH 43205.
14. "Policies and Guidelines for Driver and Traffic Safety Education," *Proceedings Sixth National Conference on Safety Education*, Vol. II, 1980, American Driver and Traffic Safety Education Association, 1201 Sixteenth Street, N.W., Washington, D.C. 20036.
15. "Policies and Guidelines for Motorcycle Safety Education," *Proceedings Sixth National Conference on Safety Education*, Vol. III, 1980, American Driver and Traffic Safety Education Association, 1201 Sixteenth Street, N.W., Washington, D.C. 20036.

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21. *Texas Driver & Traffic Safety Education Association Journal, Volume 9*, 1979, "Are Motorcycle Helmets Necessary?" TDTSEA Journal, Driver Education Section, Texas Education Agency, 201 East 11th Street, Austin, TX 78701.

22. *Traffic Safety*, "A Look at Motorcycle Accidents in 1976," 1978, by Barbara Carraro. National Safety Council, 444 North Michigan Avenue, Chicago, IL 60611.

23. *Traffic Safety*, "Update: Motorcycle Accidents in 1977," Volume 79, No. 2, 1979, by Barbara Carraro, National Safety Council, 444 North Michigan Avenue, Chicago, IL 60611.

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Motorcycle Safety Foundation, 780 Elkridge Landing Road, Linthicum, Maryland 21090.

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25. *Analysis of Motorcycle Operator Tasks*, 1974.

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Appendix J

Glossary

This glossary includes both technical language and slang terms used in relation to motorcycles.

APE HANGERS. Extraordinarily high handlebars on a motorcycle. These handlebars actually reduce a rider's ability to control the machine.

ATC. All terrain vehicle—usually a three-wheeled cycle.

BACK SHIFTING. Downshifting.

BARREL. Slang for cylinder.

BARS. Handlebars.

BASH PLATE. Protective plate made of metal or fiberglass and fitted under the engine and transmission.

BEEZER. Slang term for BSA motorcycles.

BEHIND THE BARS. Slang for on the motorcycle.

BIKE. Slang for motorcycle.

BLOW (an engine). To damage an engine extensively, usually by breaking a rod or valve or burning up a piston.

BORE. Inside diameter of a cylinder. Also, to enlarge a cylinder (as in "bore out").

BREAK LOOSE. To spin the rear wheel, causing loss of traction. Often occurs in trail and dirt riding.

BUNJIE CORD. Elastic cord used to secure articles to luggage rack.

CASE. Crankcase.

CC. Cubic centimeter (the measurement by which a motorcycle's displacement or engine size traditionally is rated).

CHOPPER. Customized motorcycle. (Purists say that only rigid framed Harley Davidsons qualify as choppers; others feel that any bike with a sissy bar is a chopper.)

CLOWN. Derisive description of a rider who does not behave in a proper manner, either on or off the motorcycle. Usually implies a lack of intelligence or common sense.

COLORS. Club emblems and jacket, sometimes worn by "outlaw" motorcyclists.

CRANK. Crankshaft.

CRASH BAR. Bars or tubing usually bolted on a motorcycle to protect the rider's legs or engine parts in case of a spill.

DEAD MAN THROTTLE. Throttle which will not return to "off" position if the operator's hand is removed. Dead man throttles are no longer made but may be found on older model motorcycles.

DIPSTICK. Metal rod, usually attached to an upper crankcase screw, which is used to measure the oil in the crankcase.

ENDURO. Competition in which riders must negotiate various types of terrain, maintaining set average rates of speed.

EYE GEAR. Eye protection, such as faceshield, glasses, goggles, or bubbles.

FAIRING. Fiberglass or plastic shield attached to the front of motorcycles to provide protection and streamlining. Often incorporates a windshield.

FLOATING BACKING PLATE. A brake backing plate secured to the motorcycle frame in such a way that locking up the brake doesn't stop the suspension from functioning.

FOOTPEGS. Footrests that extend on both sides of the motorcycle for the operator and for the passenger. Pegs that fold up and rearward to avoid spills and injuries to lower extremities are desirable.

FORK BOOTS. Rubber covers that fit over the fork legs to keep grime out of the inner parts of the fork.

FORK BRACE. Metal brace which fits over front wheel and keeps the fork legs in line, aiding handling in some cases.

FORK LOCK. Lock on front fork, also called a steering lock, to discourage or prevent theft.

FOUR-STROKE. Engine requiring four strokes of the piston to complete each cycle. Considered by engineers to be more effective in larger displacement engines. Usually requires multiple cylinders.

FUELCOCK. Valve controlling the fuel from the tank to the carburetor. Unless it is vacuum controlled, a fuelcock has on, off, and reserve positions.

GEARBOX. Transmission.

GRASSHOPPERS. Tires with medium tread design. Can be used on the street or on trails.

GREEN LIGHT. Found on instrument cluster of some motorcycles to indicate neutral position.

GUSSET. Triangular metal brace which reinforces a corner. Frame tubes often have gussets where they come together at an angle.

GYROSCOPIC EFFECT. Tendency of moving two-wheeled vehicle to remain upright due to rotation of wheels on a fixed axis. Can affect emergency turn maneuvers.

HACK. Slang for sidecar.

HAT. Helmet.

HEAD. Cylinder head.

HILLBILLY. Trail machine.

HOG. Slang for a fully equipped Harley Davidson road bike.

HORSEPOWER. Unit for measuring the power of an engine.

JIFFY STAND. (See side stand.)

KICK STARTER. Foot-operated lever which turns the engine over for starting. May be located on left or right side.

KIDNEY BELT. Wide belt worn by motorcycle competitors and road riders to alleviate fatigue caused by vibration and jarring.

KILL SWITCH. Switch found on handlebars to turn the engine off, especially in an emergency. Sometimes called a cut-off switch.

KNOBBY. Special tire for dirt racing and riding which has many raised knobs of rubber around its circumference.

KNOCKING. Engine noise usually dull and low pitched caused by loose or worn out bearings.

LEAN. Leaning position taken by the rider and passengers when turning corners or making lateral movements.

LEATHERS. Leather clothing worn while riding.

LUNGER. Any single-cylinder engine.

MEGAPHONES. Loud muffler devices with a megaphone shape. Megaphones generate noise and create a public nuisance without increasing power output. Racing megaphones which are used without a silencing device, do increase power and are used only on race tracks.

MINIBIKE. "Any vehicle which meets any one of the following criteria: (1) Less than a 10-inch nominal wheel-rim size, (2) Less than a 40-inch wheel-base, (3) Less than 45cc engine, and/or (4) Less than a 25-inch seat height measured at the lowest point on the top of the seat cushion without a rider" (Motorcycle Industry Council definition).

ON THE PIPE. Descriptive of an engine operating close to its peak power point in terms of rpm.

OVERSQUARE. Engine with a bore measurement larger than its stroke.
PEAKY. Descriptive of an engine whose usable power is restricted to a narrow rpm range.
PEDESTAL STAND. Kickstand, sometimes called a center stand, which holds the motorcycle with the rear wheel off the ground.
PET COCK. Gas cap (derived from British "petrol cap" or "petrol cock").
PINGING. Clattering noise caused by low octane fuel, incorrect ignition timing or mixture.
PIPES. Exhaust pipes.
POT. Carburetor.
POWERBAND. Range of usable power of an engine.
QUICK THROTTLE. Hand throttle which operates carburetor from idle to full-on in a quarter turn, used mainly in competition.
RAKE. Angle of the frame head, stock center line to vertical.
RED LINE. Marked area on the tachometer that indicates upper limit of safe engine revolutions per minute.
RIDER. Operator or driver of a motorcycle.
RIGID FRAME. Motorcycle without a swinging arm or one which has the rear shock absorbers replaced with metal struts.
RIM LOCK. Device which fits between the tire tube and the rim. The rim lock forces the tire bead against the rim to prevent the tire from slipping around the rim.
ROD. Connecting rod.
R.P.M.'s. Revolutions the crankshaft turns per minute.
SAFETY BARS. (See crash bars.)
SEAT STRAP. Strap across seat which passengers can use to hang onto.
SEIZE, SEIZE UP. Engine stoppage caused by an enlarged piston due to excess heat, ring breakage, or the introduction of a foreign object in the combustion chamber.
SHOCKS. Shock absorbers.
SHORTY. A helmet that does not cover the ears. Also called a brain pot!
SHUT OFF. To stop or slow down.
SHROUDS. Naugahyde or plastic covers fitted over the clutch and brake levers to keep dust, sand, and mud out of the cables. (Similar to a boot on a standard shift automobile.)
SIDE STAND. Kickstand found on side of a motorcycle.
SISSY BAR. Steel or iron bar fastened to the rear of the seat to provide a back rest for the rider or passenger.
SKID PLATE. (See bash plate.)
SKINS. Slang for protective leather clothing. Also used to mean tires.
SPANNER. Wrench (usually seen in owner's manuals for bikes made in England).
SPRINGER FORKS. Front forks with a pivot and spring shock absorber arrangement instead of the conventional hydraulic dampening.
STEERING DAMPER. Knob or device which controls the ease with which the handlebar turns the front wheel.
STINGER. Rear tube section of expansion chamber.
STRAIGHT PIPE. Exhaust system with no muffler attached. Increases low and torque but creates unwarranted noise.
STREET BIKE. Motorcycle designed for highway or street use.
STROKE. Measurement of the distance the piston travels from bottom dead-center to top dead-center.
SWINGING ARM. The suspension unit on which a motorcycle flexes.

TAILGATING. Riding dangerously close behind another vehicle.
THUMPER. Single-cylinder four-cycle motorcycle.
TICKLE. To flood the carburetor by mechanically lowering the float in the float chamber. Tickling is done to provide extra gas in the cylinder for cold starting.
TOOL KIT. Set of tools found on most motorcycles, contains most of those necessary for on-the-spot minor adjustments or repairs.
TORQUE. The force that provides rotation or a measurement of that force in foot pounds.
TOURING. Highway riding, usually over long distances on larger motorcycles (500cc or larger).
TRAILING. Riding mountains and desert trails for entertainment.
TRIPLE CLAMP. Device that secures the front forks to the steering pivot.
TRUMPET. Triumph motorcycle.
TWO-STROKE. Engine in which the piston makes only two strokes for each complete engine cycle. Provides maximum usable horsepower and efficiency. Used primarily in lower displacement engines because of the higher power to weight ratio.
UNDERSQUARE. Engine with a stroke measurement larger than its bore.
WHISKER. Formation of a ridge across a spark plug's electrodes, shorting the plug. Thought to be caused by foreign material in the combustion chamber.